ORDER NO. SD8001-1660

Service Manual

FM/AM Stereo Receiver

SA-303

[E], [EG], [XGH], [XA], [XAL]

SA-303(K)

[E], [EG], [XGH]

SA-303

SA-303(K)

*** The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.**

Areas

* [E] and [EG] are available in Scandinavia and European.
* [XGH] is available in Holland.
* [XA] is available in Asia, Latin America, Middle East and Africa.
* [XAL] is available in Australia.

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TECHNICAL SPECIFICATIONS [DIN 45 500]

Specifications are subject to change without notice for further improvement.

AMPLIFIER SECTION

20 Hz ～ 20 kHz continuous power output both channels driven	2 x 42W (4Ω), 2 x 40W (8Ω)
40 Hz ～ 16 kHz continuous power output both channels driven	2 x 42W (4Ω), 2 x 40W(8Ω)
1 kHz continuous power output both channels driven	2 x 50W(4Ω), 2 x 45W(8Ω)
Total harmonic distortion	
rated power at 20 Hz ～20 kHz	0.08% (4Ω), 0.04% (8Ω)
rated power at 40 Hz ～16 kHz	0.08% (4Ω), 0.04% (8Ω)
rated power at 1 kHz	0.04% (4Ω), 0.04% (8Ω)
half power at 20 Hz ～20 kHz	0.025% (8Ω)
half power at 1 kHz	0.009% (8Ω)
–26 dB power at 1 kHz	0.1% (4Ω)
50 mW power at 1 kHz	0.12% (4Ω)
Intermodulation distortion	
rated power at 250 Hz: 8 kHz= 4:1, 4Ω	0.08%
rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω	0.04%

Power bandwidth both channels driven, –3 dB		10 Hz ～35 kHz (4Ω)
Damping factor		10(4Ω), 20(8Ω)
Input sensitivity and impedance	PHONO	2.5 mV/47kΩ
	AUX	150 mV/27kΩ
	TAPE 2	150 mV/27kΩ
	TAPE 1 REC/PLAY	180 mV/27kΩ
PHONO maximum input voltage (1 kHz, RMS)		150 mV
S/N		
rated power (4Ω)	PHONO	70 dB (80 dB, IHF, A, 8Ω)
	AUX	88 dB (95 dB, IHF, A, 8Ω)
–26 dB power (4Ω)	PHONO	64 dB
	AUX	66 dB
50 mW power (4Ω)	PHONO	62 dB
	AUX	62 dB
Frequency response	PHONO	RIAA standard curve ±0.8 dB (30 Hz ～15 kHz)
	AUX	7 Hz ～45 kHz (–1 dB) ±0.2 dB(20 Hz ～20 kHz)

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

SA-303

Tone controls	**BASS**	50 Hz, +10 dB ~ −10 dB
	TREBLE	20 kHz, +10 dB ~ −10 dB
High-cut filter		7 kHz, −6 dB/oct.
Loudness control (volume at −30 dB)		50 Hz, +9 dB
Output voltage and impedance	**TAPE, 1, 2 REC OUT**	150 mV
	TAPE 1 REC/PLAY	30 mV/82 kΩ
Channel balance, AUX 250 Hz ~ 6,300 Hz		±1.0 dB
Channel separation, AUX 1 kHz		55 dB
Headphones output level and impedance		420 mV/330Ω
Load impedance	**MAIN or REMOTE**	4Ω ~ 16Ω
	MAIN and REMOTE	8Ω ~ 16Ω

FM TUNER SECTION

Frequency range		88 ~ 108 MHz
Sensitivity	**S/N 30 dB**	1.9μV (300Ω), 1.3μV (75Ω)
	S/N 26 dB	1.7μV (300Ω), 1.2μV (75Ω)
	S/N 20 dB	1.5μV (300Ω), 0.9μV (75Ω)
IHF usable sensitivity		1.9μV (IHF '58)
IHF 46 dB stereo quieting sensitivity		22μV/75Ω
Total harmonic distortion	**MONO**	0.15%
	STEREO	0.3%
S/N	**MONO**	60 dB (75 dB, IHF)
	STEREO	58 dB (70 dB, IHF)
Frequency response		20 Hz ~ 15 kHz, +1 dB ~ −2 dB 20 Hz ~ 14 kHz, +1.5 dB ~ −1.5 dB
Alternate channel selectivity		70 dB
Capture ratio		1.2 dB
Image rejection at 98 MHz		60 dB
IF rejection at 98 MHz		75 dB
Spurious response rejection at 98 MHz		82 dB
AM suppression		55 dB
Stereo separation	**1 kHz**	45 dB
	10 kHz	35 dB
Carrier leak	**19 kHz**	−30 dB (−40 dB, IHF)
	38 kHz	−50 dB (−50 dB, IHF)
Channel balance (250 Hz ~ 6,300 Hz)		±1.5 dB
Limiting point		1.2μV
Power bandwidth	**IF amplifier**	180 kHz
	FM demodulator	1000 kHz
Antenna terminals		300Ω (balanced) 75Ω (unbalanced)

AM TUNER SECTION

Frequency range	525 ~ 1605 kHz
Sensitivity (S/N 20 dB)	30 μV, 300 μV/m
Selectivity	30 dB
Image rejection at 1,000 kHz	50 dB
IF rejection at 1,000 kHz	40 dB

GENERAL

Power consumption	430W
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W x H x D)	430 x 142 x 291 mm (16-15/16" x 5-19/32" x 11-15/16")
Weight	8.0 kg, (17.6 lb.)

TECHNISCHE DATEN

Spezifikationen können infolge von verbesserungen ohne Ankündigung geändert werden.

[DIN 45 500]

VERSTÄRKERTEIL

Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz		
beide Kanäle ausgesteuert		2 x 42W (4Ω), 2 x 40W (8Ω)
Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz		
beide Kanäle ausgesteuert		2 x 42W (4Ω), 2 x 40W (8Ω)
Dauerton-Ausgangsleistung bei 1 kHz		
beide Kanäle ausgesteuert		2 x 50W (4Ω), 2 x 45W (8Ω)
Gesamtklirrfaktor		
Nennleistung bei 20 Hz ~ 20 kHz		0.08% (4Ω), 0.04% (8Ω)
Nennleistung bei 40 Hz ~ 16 kHz		0.08% (4Ω), 0.04% (8Ω)
Nennleistung bei 1 kHz		0.04% (4Ω), 0.04% (8Ω)
halbe Nennleistung bei 20 Hz ~ 20 kHz		0.025% (8Ω)
halbe Nennleistung bei 1 kHz		0.009% (8Ω)
−26 dB Leistung bei 1 kHz		0.1% (4Ω)
50 mW Leistung bei 1 kHz		0.12% (4Ω)
Intermodulationsfaktor		
Nennleistung bei 250Hz: 8 kHz = 4:1, 4Ω		0.08%
Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8Ω		0.04%
Leistungsbandbreite beide		
Kanäle ausgesteuert bei −3 dB		10 Hz ~ 35 kHz (4Ω)
Dämpfungsfaktor		10 (4Ω), 20 (8Ω)
Eingangsempfindlichkeit und-impedanz		
Phono		2.5mV/47kΩ
Aux		150mV/27kΩ
Tape 2		150mV/27kΩ
Tape 1 Aufnahme/wiedergabe (TAPE 1 REC/PLAY)		180mV/27kΩ
MaximaleTA-Eingangsspannung (1 kHz, eff.)		150mV
Geräuschabstand		
Nennleistung (4Ω)	**Phono**	70 dB (80 dB, IHF, A, 8Ω)
	Aux	88 dB (95 dB, IHF, A, 8Ω)
−26 dB Leistung (4Ω)	**Phono**	64 dB
	Aux	66 dB
50 mW Leistung (4Ω)	**Phono**	62 dB
	Aux	62 dB
Frequenzgang	**Phono**	RIAA-Standardkurve ±0.8 dB (30 Hz ~ 15 kHz)
	Aux	7 Hz ~ 45 kHz (−1 dB) ±0.2 dB (20 Hz ~ 20 kHz)
Klangregler		
Baßregler (BASS)		50 Hz, +10 dB ~ −10 dB
Höhenregler (TREBLE)		20 kHz, +10 dB ~ −10 dB
Rauschfilter		7 kHz, −6 dB/Okt.
Gehörrichtige Lautstärkekorrektur (Loudness)		
(bei −30 dB Ausgangsleistung)		50 Hz, +9 dB
Ausgangsspannung und -impedanz		
Tape 1/2 Aufnahme (TAPE 1, 2 REC OUT)		150 mV
Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)		30 mV/82 kΩ
Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)		±1.0 dB
Übersprechdämpfung (Aux, 1 kHz)		55 dB
Kopfhörerpegel und -impedanz		420 mV/330Ω
Lautsprecherimpedanz	**MAIN oder REMOTE**	4Ω ~ 16Ω
	MAIN und REMOTE	8Ω ~ 16Ω

UKW-TUNERTEIL

Wellenbereich		88 ~ 108 MHz
Eingangsempfindlichkeit		
S/R 30 dB		1.9μV (300Ω), 1.3μV (75Ω)
S/R 26 dB		1.7μV (300Ω), 1.2μV (75Ω)
S/R 20 dB		1.5μV (300Ω), 0.9μV (75Ω)
Nutzempfindlichkeit nach IHF		1.9μV (nach IHF '58)
Stereoumschaltschwelle bei 46 dB nach IHF		22μV/75Ω
Gesamtklirrfaktor	**Mono**	0.15%
	Stereo	0.3%
Geräuschabstand	**Mono**	60 dB (75 dB nach IHF)
	Stereo	58 dB (70 dB nach IHF)
Frequenzgang		20 Hz ~ 15 kHz (+1 dB ~ −2 dB) 20 Hz ~ 14 kHz (+1.5 dB ~ −1.5 dB)
Trennschärfe bei Störsender		70 dB
Einfangverhältnis		1.2 dB
Spiegelfrequenz-Dämpfung bei 98 MHz		60 dB
ZF-Dämpfung bei 98 MHz		75 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz		82 dB
AM-Unterdrückung		55 dB
Übersprechdämpfung	**1 kHz**	45 dB
	10 kHz	35 dB
Trägerrest	**19 kHz**	−30 dB (−40 dB nach IHF)
	38 kHz	−50 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)		±1.5 dB
Begrenzereinsatz		1.2μV
Bandbreite	**ZF-Verstärker**	180 kHz
	UKW-Demodulator	1000 kHz
Antennenanschluß		300Ω (symmetrisch) 75Ω (unsymmetrisch)

AM-TUNERTEIL

Wellenbereiche	525 ~ 1605 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30μV, 300μV/m
Trennschärfe	30 dB
Spiegelfrequenz-Dämpfung bei 1000 kHz	50 dB
ZF-Dämpfung bei 1000 kHz	40 dB

ALLGEMEINE DATEN

Leistungsaufnahme	430 W
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (BxHxT)	430 x 142 x 291 mm
Gewicht	8.0 kg

DONNEES TECHNIQUES Sujet à changment sans préaris.

[DIN 45 500]

SECTION AMPLIFICATEUR

Puissance de sortie continue de 20 Hz ~ 20 kHz, les deux canaux en circuit		2 x 42W (4Ω), 2 x 40W (8Ω)
Puissance de sortie continue de 40 Hz ~ 16 kHz, les deux canaux en circuit		2 x 42W (4Ω), 2 x 40W (8Ω)
Puissance de sortie continue à 1 kHz les deux canaux en circuit		2 x 50W (4Ω), 2 x 45W (8Ω)
Distorsion harmonique totale		
à puissance nominale (20 Hz ~ 20 kHz)		0.08% (4Ω), 0.04% (8Ω)
à puissance nominale (40 Hz ~ 16 kHz)		0.08% (4Ω), 0.04% (4Ω)
à puissance nominale (1 kHz)		0.04% (4Ω), 0.04% (8Ω)
à demi-puissance (20 Hz ~ 20 kHz)		0.025% (8Ω)
à demi-puissance (1 kHz)		0.009% (8Ω)
puissance de - 26 dB à 1 kHz		0.1% (4Ω)
puissance de 50 mW à 1 kHz		0.12% (4Ω)
Distorsion d'intermodulation		
a puissance nominale à 250 Hz: 8 kHz= 4:1, 4Ω		0.08%
à puissance nominale à 60 Hz: 7 kHz= 4:1, SMPTE, 8Ω		0.04%
Réponse de fréquences les deux canaux en circuit, −3 dB		10 Hz ~ 35 kHz (4Ω) 10 (4Ω), 20 (8Ω)
Coefficient d'amortissement		
Sensibilité et impédance d'entrée		
PHONO		2.5 mV/47 kΩ
AUX (AUX)		150 mV/ 27 kΩ
BANDE 2 (TAPE 2)		150 mV/27 kΩ
BANDE1, ENREGISTREMENT/LECTURE (TAPE 1 REC/PLAY)		180 mV/27 kΩ
PHONO (tension d'entrée maximum, 1 kHz RMS)		150 mV
Signal/Bruit		
à puissance nominale (4Ω)	PHONO	70 dB (80 dB, IHF, A.8Ω)
	AUX	88 dB (95 dB, IHF, A. 8Ω)
puissance de − 26 dB (4Ω)	PHONO	64 dB
	AUX	66 dB
puissance de 50 mW (4Ω)	PHONO	62 dB
	AUX	62 dB
Réponse de fréquence	PHONO	Courbe nominale RIAA ±0.8 dB (30 Hz ~ 15 kHz)
	AUX	7 Hz ~ 45 kHz (−1 dB) ±0.2 dB (20 Hz ~ 20 kHz)
Réglage de la tonalité	BASSES (BASS)	50 Hz, +10 dB ~ −10 dB
	AIGUS (TREBLE)	20 kHz, +10 dB ~ −10 dB
Filtre coupe-hauts		7 kHz, −6 dB/oct.
Compensateur physiologique(volume à −30 dB)		50 Hz, +9 dB
Tension de sortie et impédance		
SORTIE ENREGISTREMENT/BANDE 1, 2 (TAPE 1, 2 REC OUT)		150 mV
ENREGISTREMENT/LECTURE BANDE 1 (TAPE 1 REC/PLAY)		30 mV/82 kΩ
Equilibrage des canaux, AUX 250 Hz ~ 6,300 Hz		±1.0 dB
Séparation des canaux, AUX 1 kHz		55 dB
Niveau de sortie des casques et impédance		420 mV/ 330Ω
Impédance de charge		
PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)		4Ω ~ 16Ω
PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)		8Ω ~ 16Ω

SECTION SYNTONISATEUR FM

Gamme de fréquence		88 ~ 108 MHz
Sensibilité	S/B 30 dB	1.9μV (300Ω), 1.3μV (75Ω)
	S/B 26 dB	1.7μV (300Ω), 1.2μV (75Ω)
	S/B 20 dB	1.5μV (300Ω). 0.9μV (75Ω)
Sensibilité utilisable IHF		1.9μV (IHF '58)
Sensibilité stéréo au seuil de 46 dB, IHF		22 μV/75Ω
Distorsion harmonique totale	MONO	0.15%
	STEREO	0.3%
Signal/Bruit	MONO	60 dB (75 dB, IHF)
	STEREO	56 dB (70 dB, IHF)
Réponse de fréquence		20 Hz ~ 15 kHz, + 1 dB ~ −2 dB 20 Hz ~ 14 kHz, +1.5 dB ~ −1.5 dB
Sélectivitie alternée par canal		70 dB
Taux de capture		1.2 dB
Rejection d'image à 98 MHz		60 dB
Rejection FI à 98 MHz		75 dB
Rejection de réponse parasite à 98 MHz		82 dB
Suppression AM		55 dB
Séparation stéréophonique	1 kHz	45 dB
	10 kHz	35 dB
Fuite de porteuse	19 kHz	−30 dB (−40 dB, IHF)
	38 kHz	−50 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz ~ 6,300 Hz)		±1.5 dB
Point de limite		1.2μV
Largeur de band	Amplificateur FI	180 kHz
	Démodulateur FM	1000 kHz
Bornes d'antenne		300Ω (symétrique) 75Ω (asymétrique)

SECTION SYNTONISATEUR AM

Gamme de fréquence	525 ~ 1605 kHz
Sensibilité (S/B 20 dB)	30 μV, 300 μV/m
Sélectivité	30 dB
Réjection d'image à 1,000 kHz	50 dB
Réjection FI à 1,000 kHz	40 dB

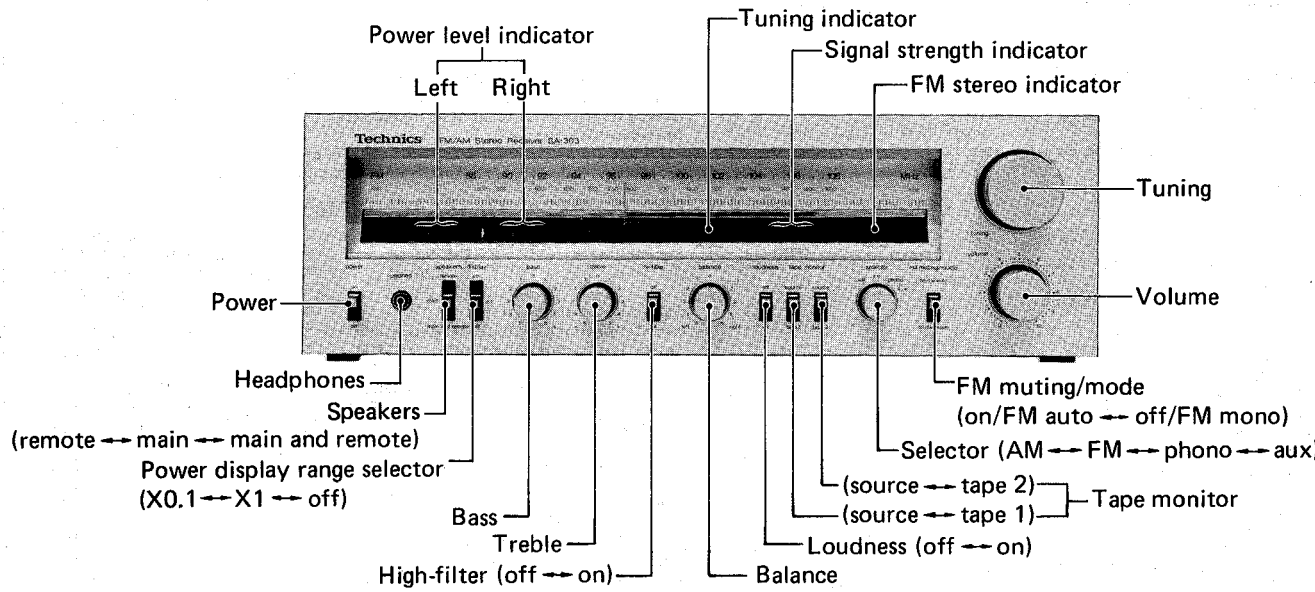
DIVERS

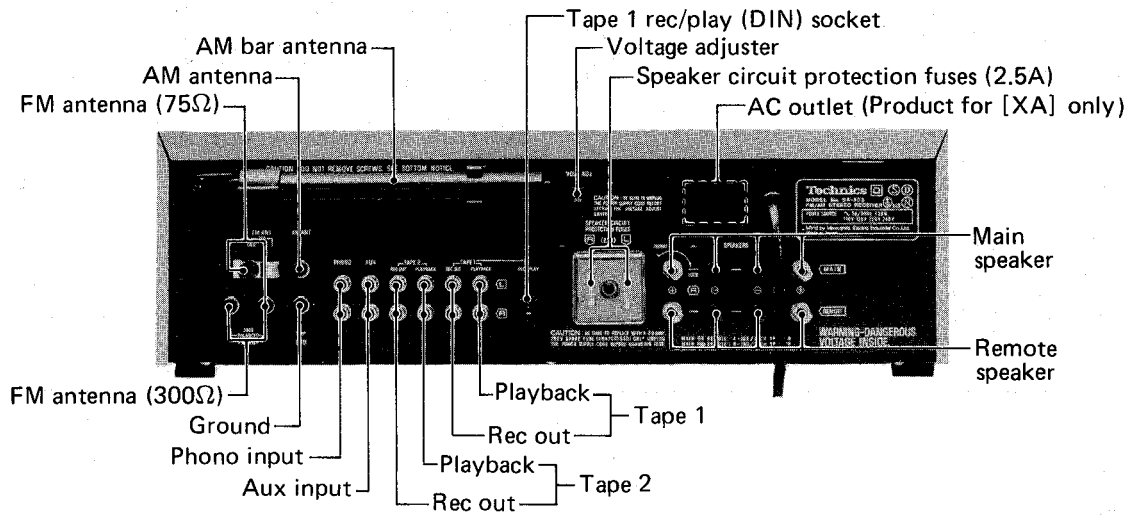
Consommation	430 W
Alimentaiton	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L x H x Pr)	430 x 142 x 291 mm
Poids	8.0 kg

■ NOTE

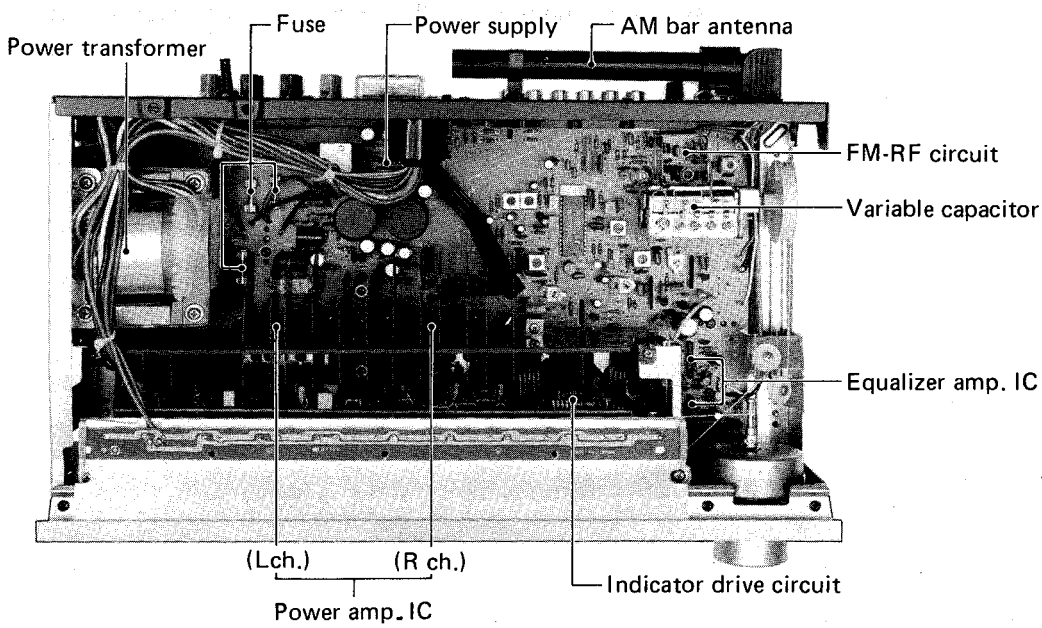
The unit is provided with the speaker circuit protection fuses at the right and left channels respectively. The fuse is to prevent the power IC from destruction, should the speaker terminals be short-circuited. Accordingly, if the unit fails to function upon completion of the speaker connections, check the speaker circuit protection fuses first of all for possible blowing.

■ LOCATION OF CONTROLS





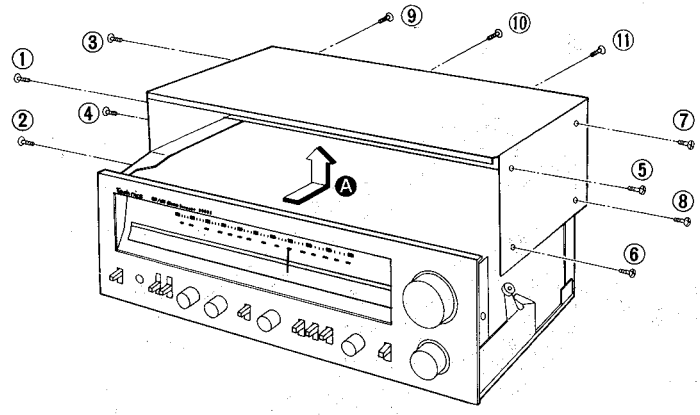
- **The products for destination [XA] is equipped with AC outlet.**



■ DISASSEMBLY INSTRUCTIONS

• How to remove the cabinet

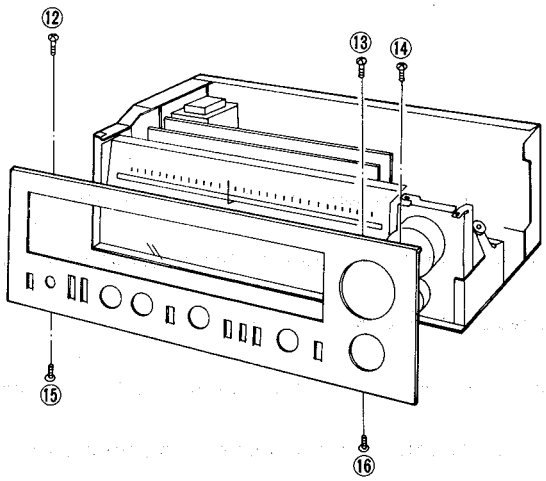
1. Remove the 8 setscrew (Fig. 1: ① ~ ⑧) on the side and 3 setscrews (Fig. 1: ⑨ ~ ⑪) on the back of the cabinet.
2. Shift the cabinet backward and lift is upward. (Arrow Ⓐ in Fig. 1)



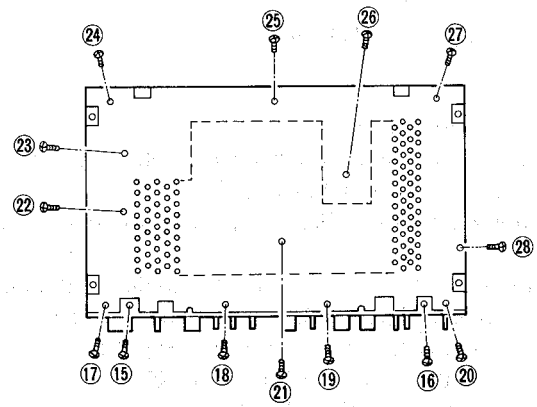
[Fig. 1]

• How to remove the front panel and the bottom board.

1. Remove the 5 setscrews (Fig. 2 : ⑫ ~ ⑯) of the front panel and remove the 2 setscrews (Fig. 3 : ⑱, ⑲) of the bottom board.
2. Pull the front panel outward from the front of the unit.
3. To remove the bottom board, remove the 12 setscrews (Fig. 3 : ⑰ ~ ㉘) of the bottom board.



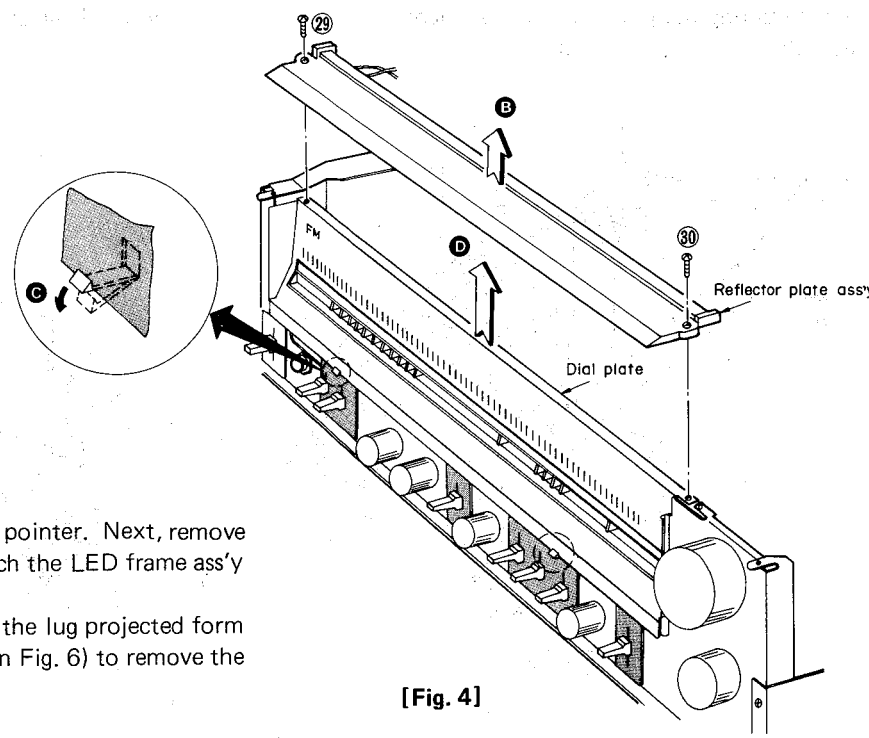
[Fig. 2]



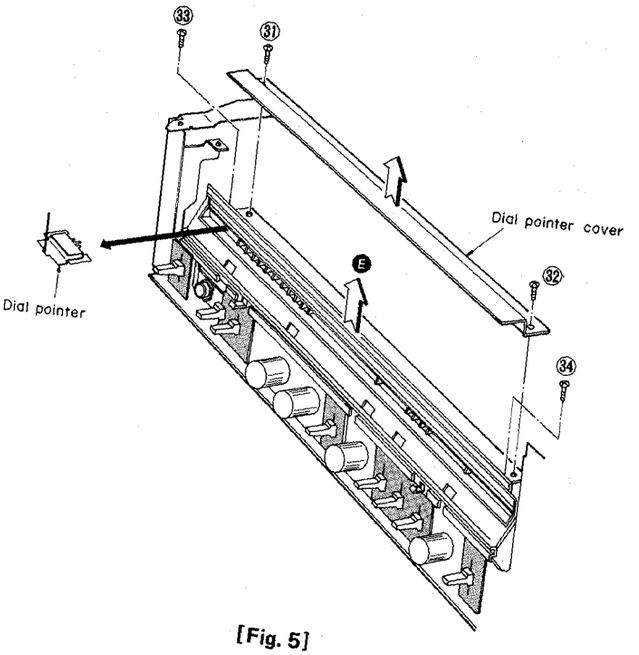
[Fig. 3]

• How to remove the LED indicator P.C.B.

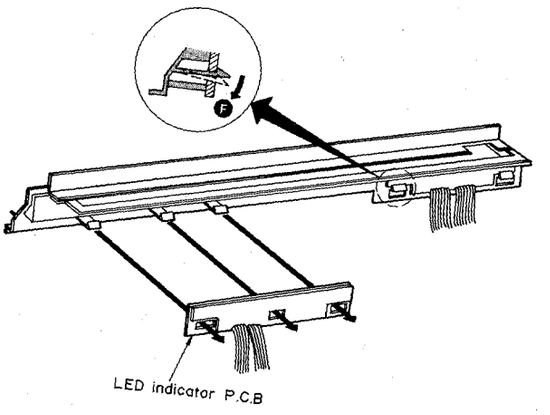
1. Remove the cabinet (Refer to the section "How to remove the cabinet)
2. Remove the 2 setscrews (Fig. 4 :㉙, ㉚) to detach the reflector plate ass'y in the direction of the arrow Ⓑ (Refer to Fig. 4).
3. The dial plate is secured with the two lugs projected from the LED frame ass'y.
   Press the lugs in the direction of the arrow Ⓒ to detach the dial plate in the direction of the arrow Ⓓ.
4. Remove the 2 setscrews (Fig. 5 : ㉛ ㉜) to detach the dial pointer cover.
5. Remove the dial cord and pull out the dial pointer. Next, remove the 2 setscrews (Fig. 5 : ㉝ , ㉞) to detach the LED frame ass'y in the direction of the arrow Ⓔ.
6. The LED indicator P.C.B. is secured with the lug projected form the LED frame. So, bend the down (Ⓕ in Fig. 6) to remove the LED indicator P.C.B.



[Fig. 4]



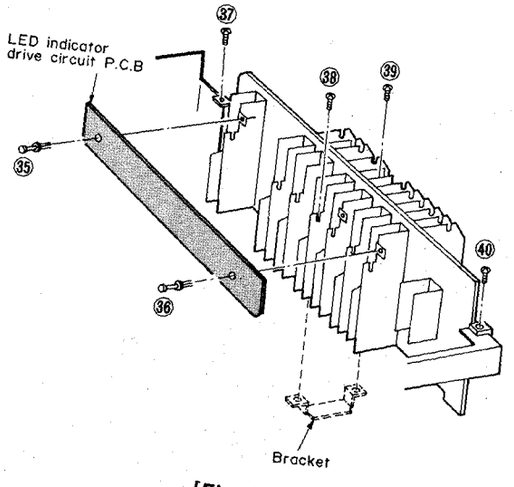
[Fig. 5]



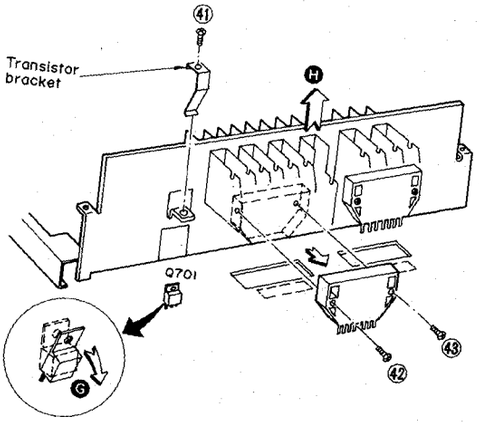
[Fig. 6]

• How to remove the power IC

1. Remove the cabinet and bottom board. (Refer to the sections "How to remove the cabinet" and "How to remove the front panel and the bottom board".)
2. Remove the 2 setscrews (Fig. 4 : ㉙, ㉚) to detach the reflector plate ass'y in the direction of the arrow Ⓔ (Refer to Fig. 4).
3. Remove the 2 Lock pins (Fig. 7 : ㉟, ㊱) to detach the LED indicator drive circuit P.C.B.
4. Remove the solder of power IC for both Lch and Rch.
5. Remove the transistor bracket setscrew (Fig. 8 : ㊶) to detach the transistor bracket. Unsolder the transistor Q701 and bend it down in the direction of the arrow Ⓖ.
6. Remove the 4 setscrews (Fig. 7 : ㊲～㊵) at the front chassis and bracket, and then remove the heat sink along with the power IC in the direction of the arrow Ⓗ.
7. Remove the 2 setscrews (Fig. 8 : ㊷～㊸) used to secure the power IC on the heat sink, and then pull the power IC.
8. When mounting the power IC, apply silicone compouned (or equivalent heat diffuser) to the back of power IC, and then follow the steps 1～7 reversely.

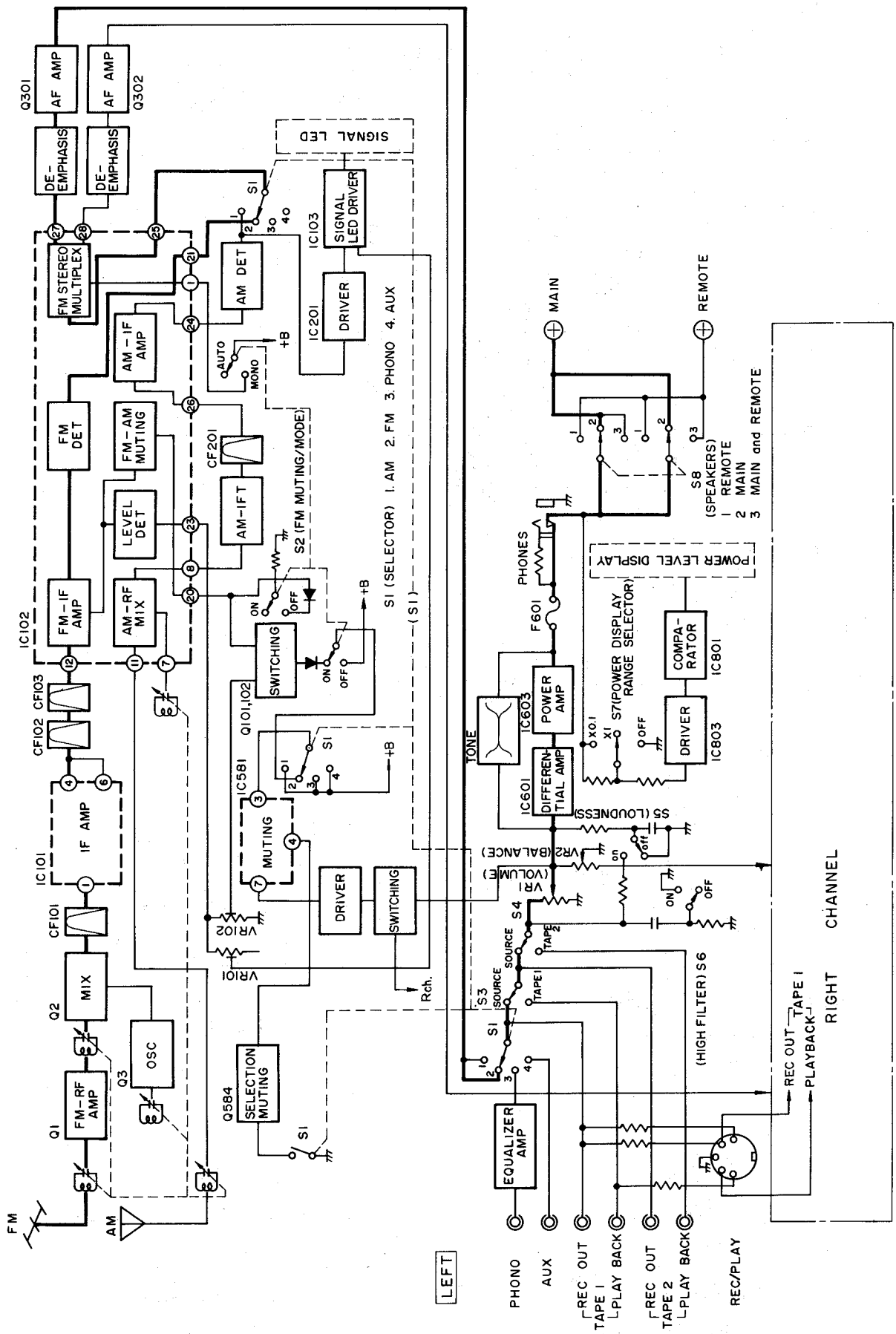


[Fig. 7]

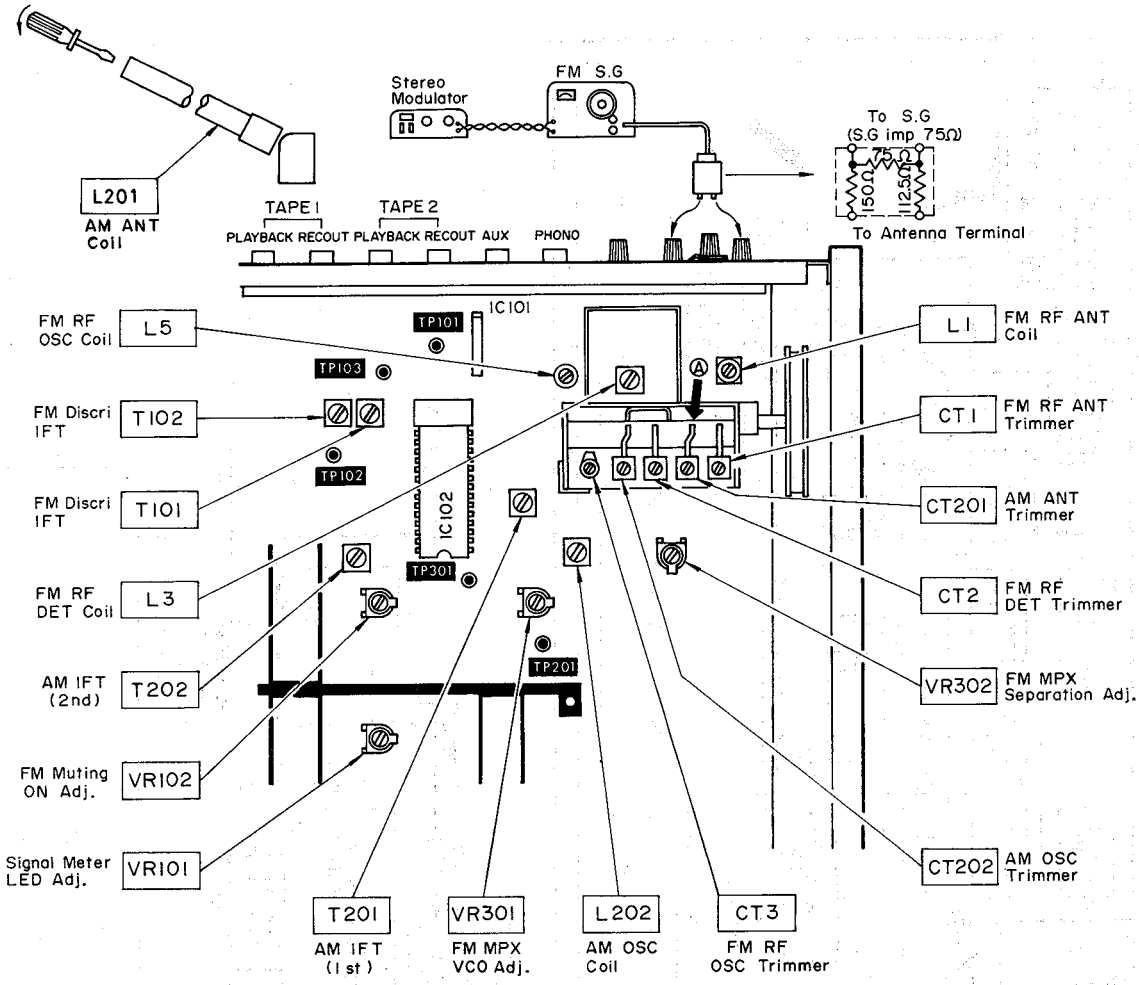


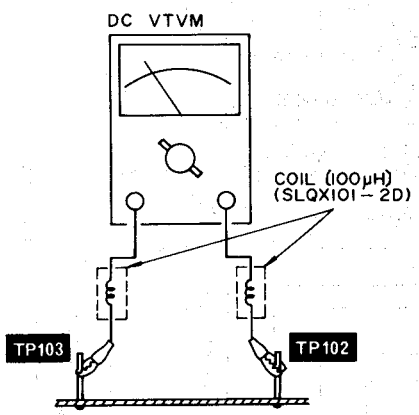
[Fig. 8]

■ BLOCK DIAGRAM

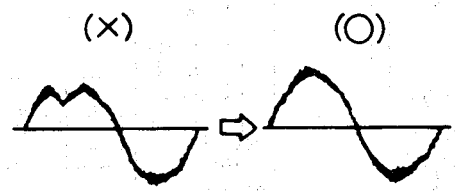


■ ADJUSTMENT POINTS



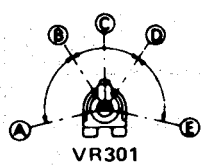


[Fig. 10]
(Abb. 1)



AF OUTPUT WAVE FORM

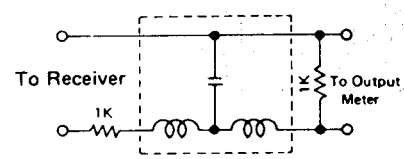
[Fig. 11]
(Abb. 2)



VR301

A – B, D – E: Stereo OFF Position.
B – D: Stereo ON Position (Indicator Lighting).
C: Adjust Point of Pilot Circuit.

[Fig. 12]
(Abb. 3)



Low Pass Filter
(fc=15kHz ~ 19kHz)

[Fig. 13]
(Abb. 4)

■ ADJUSTMENT INSTRUCTIONS — ENGLISH

Notes:

1. Band selector switch . . . . . {AM (AM Alignment) / FM (FM Alignment)
2. FM muting & mode switch . . . off/mono
3. Fix the bottom board to chassis before adjustment.
4. Maintain line voltage at rated voltage.
5. 300Ω FM dummy antenna.
6. Output of signal generator should be no higher than necessary to obtain an output reading.
7. Adjust the antenna coil (L201) position by using a screw driver so that it is at approximately 25 degrees to the rear panel.

	AM/FM SIGNAL GENERATOR CONNECTION	AM/FM SIGNAL GENERATOR FREQUENCY	DIAL SETTING	INDICATOR (VTVM or SCOPE)	ADJUSTMENT POINTS	REMARKS
	AM ADJUSTMENT					
1	High side through 0.001μF to **AM** antenna trimmer terminal. (point A). Common to chassis.	450kHz (30% Mod. with 400Hz)	Point of non-inter-ference	Connect AC VTVM or scope to "OUTPUT" terminals.	T201 (1st IFT) T202 (2nd IFT)	Adjust the input frequency and adjustment points so that the output becomes maximum.
2	Fasion loop of several turns of wire and radiate signal into loop of receiver	600kHz (30% Mod. with 400Hz)	600kHz	Connect AC VTVM or scope to "OUTPUT" terminals.	L202 (OSC Coil) L201 (ANT Coil)	Adjust for maximum output. Adjust ferrite core of L201 by screw drive.
3	Fashion loop of several turns of wire and radiate signal into loop of receiver.	1500kHz (30% Mod. with 400Hz)	1500kHz	Connect AC VTVM or scope to "SPEAKER" terminal	CT202 (OSC Trimmer) CT201 (ANT Trimmer)	Adjust for maximum output. Repeat steps 2 and 3.
	FM IF ADJUSTMENT					
4		No-Signal	Point of non-inter-ference	Connect DC VTVM to TP102, TP103 terminals. (Refer to fig. 10)	T101 (Discriminator IFT)	• FM muting/mode switch to on/auto" position • Adjust T101 core so that voltage measured in signal mode is 0V in 300 mV range
	FM RF ADJUSTMENT					
5	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	90MHz (100% Mod. with 400Hz) weak input	90MHz	Connect scope to "SPEAKER" terminal	L5 (OSC Coil) L3 (RF DET Coil) L1 (ANT Coil)	• Add weak input so that noise is included in the output wave form • Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 11) • Repeat the steps (5) and (6) until the frequency correctly matches the dial scale
6		106MHz (100% Mod. with 400Hz) weak input	106MHz	Connect scope to "SPEAKER" terminal	CT3 (OSC Trimmer) CT2 (RF DET Trimmer) CT1 (ANT Trimmer)	
	FM MONO DISTORTION ADJUSTMENT					
7	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100MHz (100% Mod. with 400Hz) weak input	100MHz	Connect DC VTVM to between TP102 and TP103 through choke coil. Refer to fig. 10 Connect scope to "SPEAKER" terminal.	T101 (Discriminator IFT)	• FM muting/mode switch to "on/auto" position • Add week input so that noise is included in the output wave form. • Make the tuning so that the output wave form is vertically symmetrical (Fig. 11) • Adjust T101 core so that voltage measured in signal mode is 0V in 300mV range. • Set the FM muting/mode switch to "on/auto" and then check steps in (4) and (7) • If it is deflected, re-adjust T101. • Adjust T102 core so that distortion of right and left channels are minimized. • Repeat steps (4) (7) and (8).
8	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to receiver.	100MHz (100% Mod. with 400Hz)	100MHz	Connect distortion meter to "SPEAKER" terminals through low pass filter. Refer to fig. 13.	T102 (Discriminator IFT)	
	FM MUTING LEVEL ADJUSTMENT					
9	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to receiver. (Product for [XA] only apply 12dB to receiver)	100MHz (100% Mod. with 400Hz)	100MHz	Connect AC VTVM or scope to "SPEAKER" terminals.	VR102 (MUTING LEVEL)	FM muting/mode switch to "on/auto". Adjust so that output can be obtained.
	SIGNAL METER LED LIGHT LEVEL ADJUSTMENT					
10	Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna.	100MHz (100% Mod. with 400Hz)	100MHz	Connect scope to "SPEAKER" terminal	VR101 (LED LIGHT LEVEL)	• With weak input signal (noise produced) at 100MHz (100% Mod. with 400Hz) applied, make tuning so that the upper and lower wave forms are symmetrical. • With the input set at 45dB (signal generator at 57dB), adjust VR101 so that all the signal strength LED's light up.

	FM MPX V.C.O. ADJUSTMENT	
	Using frequency counter	Using alternate system
11	1 100MHz Non-modulated mono signal applied to set. 2 FM muting/mode switch to "on/FM auto". 3 Connect frequency counter to **TP301** through resistor (100kΩ). 4 Adjust **VR301** to 19kHz, ±30Hz.	1 Apply stereo signal from generator or stereo station to receiver. 2 Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in fig. 12.
	SEPARATION ADJUSTMENT	
	PREPARATIONS	ADJUSTING PROCEDURE
12	1 Add 100MHz, 1kHz, 30% pilot 10% modulation, 60dB stereo signal to the receiver. 2 Connect AC VTVM or scope to "SPEAKER" terminal through low pass filter. Refer to fig. 13.	1 FM muting/mode switch to "on/auto". 2 Adjust **VR302** so that **R** output is minimized when stereo modulator is in **L** (Lch. modulation) mode and that **L** output is minimized in **R** mode.

■ ANWEISUNGEN FÜR ABGLEICHUNG — DEUTSCH

(Für Deutschland)

Anmerkungen:

1. Bereichsschalter . . . . . {AM (MW Abgleich) / FM (UKW Abgleich)
2. FM Muting/Mode Schalter . . . . . .off/mono
3. Netzspannung auf ihren Sollwert halten.
4. UKW-Kunstantenne, 300 ohm.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
6. Nittels eines Schraubenziehers die Stellung der Antennenspule (L201) so einstellen, daß, sie gegen die Rückenplatte einen Winkel von ca., 25° macht.
7. Vor Einstellungen, die Bodenplatte des Chassis befestigen.

	MW/UKW MESSENDER ANSCHLUSS	MW/UKW MESSENDER FREQUENZ	FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	MW-ABGLEICH					
1	Heißes Ende des meßsenders über einen 0.001μF. Kondensator an den AM Antenneneingang schließen. Kaltes Ende an Masse.	450kHz (400Hz Modulat., 30%)	Kein Empfang	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "SPEAKER" schließen.	T201 (1. IFT) T202 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustieren, daß der Ausgang den maximalen Wert erreicht.
2	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	600kHz (400Hz Modulat., 30%)	600kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "SPEAKER" schließen.	L202 (Osc. Spule) L201 (Ant. Spule)	Auf max. Ausgang abgleichen. Den Ferritkern von L201 mit einem Schraubendreher justieren.
3	Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen.	1500kHz (400Hz Modulat., 30%)	1500kHz	Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "SPEAKER" scheißen.	CT202(Osc. Trimmer) CT201(Ant. Trimmer)	Auf max. Ausgang abgleichen. Schritt (2) und (3) sing zu wiederholen.
	UKW-ZF-ABGLEICH					
4		Kein Signal	Kein Empfang	Elektronisches (GS-Voltmeter an Klemmen TP102 und TP103 anschließen.(Vgl. Abb. 1)	T101 (Diskriminator IFT)	1. FM muting/mode-Schalter auf "on/auto". 2. Den Kern von T101 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	UKW-HF-ABGLEICH					
5	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	87.5MHz (400Hz Modulat., 100%)	87.5MHz (Frequenz Min.)	Oszillograph über den Ausgang "SPEAKER" schließen.	L5 (Osc. Spule)	1. FM Muting-Schalter auf OFF stellen. 2. Auf max. Ausgang abgleichen.
6	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	90MHz (400Hz Modulat., 100%)	90MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	L3 (1. Det. Spule) L1 (Ant. Spule)	1. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb 2) 3. Die Einstellung von (5). (6) und (7) wiederhoten, bis die Frequenz mit der Skala übereinstimmt.
7	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	106MHz (400Hz Modulat., 100%)	106MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	CT3 (Osc. Trimmer) CT2 (RF DET Trimmer) CT1 (Ant. Trimmer)	

	MW/UKW MESSENDER ANSCHLUSS	MW/UKW MESSENDER FREQUENZ	FREQUENZ STELLUNG DES TUNER	ANZEIGEGEIRAT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät)	ABGLEICHS-PUNKTE	BEMERKUNGEN
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW- MONO					
8	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Elektronisches (GS-Voltmeter an Klemmen TP102 und TP103 anschließen. (Vgl. Abb. 1) Oszillograph über den Ausgang "SPEAKER" scheißen	T101 (Diskriminator IFT)	1. FM muting/mode-Schalter auf "on/auto" 2. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellen-form enthalten wird. 3. So einstellen daß die Ausgangswellenform vertikal symmetrisch wird (Abb. 2)
9	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 16dB einstellen.	100MHz (400Hz Modulat., 100%)	100MHz	Klirrfaktormesser an die Ausgangsklemme durch Tiefpaß filter an Ausgangsanschlüsse des Gerätes anschließen (Vgl. Abb. 4)	T102 (Diskriminator IFT)	4. Den kern von T101 so justieren, daß die gemessene Spannung im signal-losen Modus 0V im 300mV Bereich beträgt. 5. FM muting/mode-Schalter auf "on/auto" stellen dann in signalloser Mode den Schritt (4) und (7) feststellen. 6. Wenn Abweichung vorliegt. A (primäre Seite) von T101 wieder einstellen 7. T102 (B) kern für minimale verzerrung der rechten und linken Kanäle justieren. 8. Schritt (4), (8) und (9) sing zu wiederholen.
	UKW-MUTING-ABGLEICH					
10	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. Meßsender auf 16dB einstellen.	100MHz (400Hz Modulat., 100%)	100MHz	Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen.	VR102 (UKW-Muting)	Muting Schalter auf "ON" stellen. So einstellen, daß ein Ausgang zu vernehmen ist.
	ABGLEICHEN DES SIGNALMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS					
11	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	100MHz (400Hz Modulat., 100%)	100MHz	Oszillograph über den Ausgang "SPEAKER" schließen.	VR101 (Meter volume)	1. Bei schwachem Eingangs-signal (Geräusch erzeugt) von 100MHz (100% moduliert bei 400Hz), so abstimmen, daß die obere und untere Wellenform symmetrisch werden. 2. Mit Eingang auf 45dB (Signalgenerator auf 57dB) gestellt, den einstellbaren Widerstand VR102 so regulieren, daß alle LED (Leuchtdioden) des Signalmeters aufleuchten.
	UKW-STEREO-DEKODER-ABGLEICH					
	Unter Verwendung eines Zählers			Alternativ-Meßmethode		
12	1. Unmoduliertes Mono-Signal 100MHz in das Gerät speisen. 2. FM Muting/mode-Schalter auf "on/auto" stellen. 3. Zähler über einen Widerstand 100kΩ an **TP301** schließen. 4. **VR301** auf 19kHz ± 30Hz einstellen.			1. Stereosignal entweder von einem Stereogenerator. oder einem Sender einspeisen. 2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 3 gezeigt.		
	KANALTRENNUNG-ABGLEICH					
13	1. Das gerät auf 100MHz, 1kHz, Pilot 10% Modulation, 60dB Stereosignal einstellen. 2. Wechselstrom-Röhrenvoltmeter oder, Oszillograph durch Tiefpaß filter (fc = 15 ~ 19KHz) an Ausgangsanschlüsse des Gerätes anschließen. (Abb. 4)			3. FM muting/mode-Schalter auf "on/auto". 4. **VR302** auf minimale Anzeige des **R**-Ausgangs bei Stereo-modulator in **L**-(L-Kanalmodulation) Modus, und auf minimale Anzeige des **L**-Ausgangs in **R**-Modus abgleichen.		

■ INSTRUCTIONS D'ALIGNMENT — FRANÇAIS

Notes:

1. Sélecteur de gamme . . . . . { AM (Alignement AM) / { FM (Alignement FM)
2. Commutateur de silencieux/mode. . . off/mono
3. Conservel la tension du secteur à la tension nominale.
4. Antenne fictive FM 300Ω.
5. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
6. Régler la position de la bobine (L201) de l'antenne en utilisant un tournevis de telle sorte qu'alle soit environ à 25 degrés de la plaque arriére.
7. Fixer la plaque de base au châssis avant le réglage.

	AM/FM GENERATEUR BRANCHEMENT	AM/FM GENERATEUR FREQUENCE	AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
			ALIGNEMENT AM			
1	Côté chaud à travers 0.001μF, sur le trimmer de l'antenne AM. commum an shássis.	450kHz (modulé à 30% par 400Hz)	Point sans signal	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	T201 (1 transfo FI) T202 (2 transfo FI)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
2	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	600kHz (modulé à 30% par 400Hz)	600kHz	C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil.	L202 (bobine OSC) L201 (bobine ANT)	Régler au maximum de signal de sortie. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
3	Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner.	1500kHz (modulé à 30% par 400Hz)	1500kHz	C.A. voltmètre èlectronique ou oscilloscope sur prise de sortie de l'appareil.	CT202 (trimmer OSC) CT201 (trimmer ANT)	Régler au maximum de signal de sortie. Recommencez les étapes (2) et (3).
			ALIGNEMENT FI-FM			
4		Sans signal	Point sans signal	Brancher le voltmètre électronique à C.C. aux bornes TP102 et TP103. (Voir fig. 10)	T101 (transfo FI discri)	1. Commutateur de silencieux sur "on/auto". 2. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
			ALIGNEMENT RF-FM			
5	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	90MHz (modulè à 100% par 400Hz)	90MHz	Oscilloscope sur prise de sortie du tuner	L5 (bobine OSC) L3 (1er détecteur) L1 (bobine ANT)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que le forme de l'onde de sortie soit verticalement symértrique. (Voir fig. 11) 3. Refaire les réglages (5) et (6) jusqu' à ce que la fréquence corresponde correctement avec l'échells du cadran.
6	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	106MHz (modulé à 100% par 400Hz)	106MHz	Oscilloscope sur prise de sortie du tuner.	CT3 (trimmer OSC) CT2 (trimmer DET) CT1 (trimmer ANT)	
			REGLAGE DE LA DISTORSION FM EN MONO			
7	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Brancher le voltmétre électronique ä c.c. aux bornes TP102 et TP103 Oscilloscope sur prise de sortie du làmpli-tuner.	T101 (Transfo FI discri.)	1. Commutateur de silencieux sur "on/auto". 2. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 3. Faire le réglage de telle sorte que le forme de l'onde de sortie soit verticalement symértrique. (Voir fig. 11)
8	Branchez sur la prise d'antenne FM à traves une antenne fictive FM. Nivena de sortie du générateur 16 dB.	100MHz (modulé à 100% par 400Hz)	100MHz	Distorsiométre sur prise de sortie, par lintermédiaire du filtre passe-bas (fig. 13)	T102 (Transfor FI discri.)	4. Régler le noyau T101 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV. 5. Placer la commutateur Sourdine FM/Mode sur "on/auto" et vérifier l'étape (4) et (7) dans un mode sans signal. 6. S'il est déplacé,, re-régler A (côté primaire) de T101. 7. Régler le noyou T102 (B) de telle sorte que la distorsion des canaux droit et gauche soit la plus faible. 8. Recommencez les étapes (4), (7) et (8).
9	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 16dB.	100MHz (modulé à 100% par 400Hz)	100MHz	Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner.	VR101	1. Commutateur de silencieux sur "ON" 2. Régler pour obtenir une lecture en sortie.

	AM/FM GENERATEUR		AIGUILLE SUR LE FREQUENCE	INDICATEUR (VOLT-METRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE)	POINTS DE REGLAGE	OBSERVATIONS
	BRANCHEMENT	FREQUENCE				
	ABGLEICHEN DES SIGNLMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS					
10	Branchez sur la prise d'antenne FM à traves une antenne fictive FM.	100MHz (modulé à 100% par 400Hz)	100MHz	Oscilloscope sur prise de sortie du tuner.	VR101	1. Après avoir appliqué un faible signal d'entrée (bruit produit) de 100 MHz (100% modulé à 400Hz), accorder de telle sorte queles formes d'onde supérieure et inférieure soient symmét-riques. 2. Après avoir réglé l'entrée sur 45dB (oscilloscope à 57dB), régler la VR102 de telle sorte que toutes les LED de puissance de signal, s'allument.

ALIGNEMENT DU PILOTE MULTIPLEX FM	
Avec un fréquencemétre	Par un outre système
1. Signal mono 100MHz non modulé appliqué à l'appariel. 2. Commutateur de silencieux sur "on/auto". 3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ. 4. Régler **VR301** sur 19kHz ± 30Hz.	1. Appliquez à l'appareil un sinal stéréo provenant d'un générateur ou de la réception d'un émetteur. 2. Régler **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume. Collez le curseur de **VR301** comme indiquè sur la fig. 12.

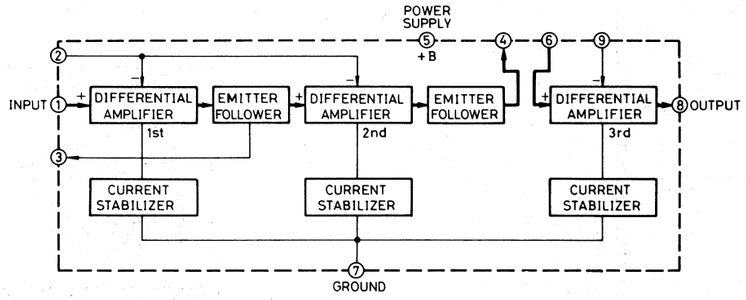
REGLAGE DE LA SEPARATION DES CANAUX	
Préparations	Procédure de réglage
1. Ajouter 100MHz, 1kHz, Modulation, pilote 10%, signal stéréophonique 60dB, à làpparell. 2. Brancher un voltmètre électronique C.A. ou un oscilloscope aux bornes de sortie, par l'intermédiaire du filtre passe-bas (fc = 15 ~ 19kHz).	1. Commutateur de silencieux fur "on/auto". 2. Régler **VR302** de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.

11

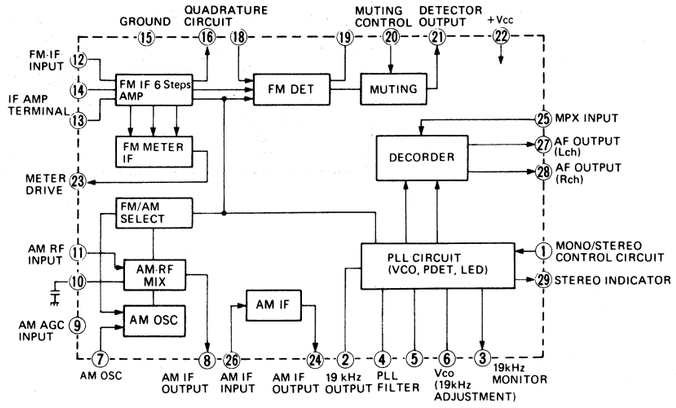
12

■ BLOCK DIAGRAM OF IC'S

*This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.

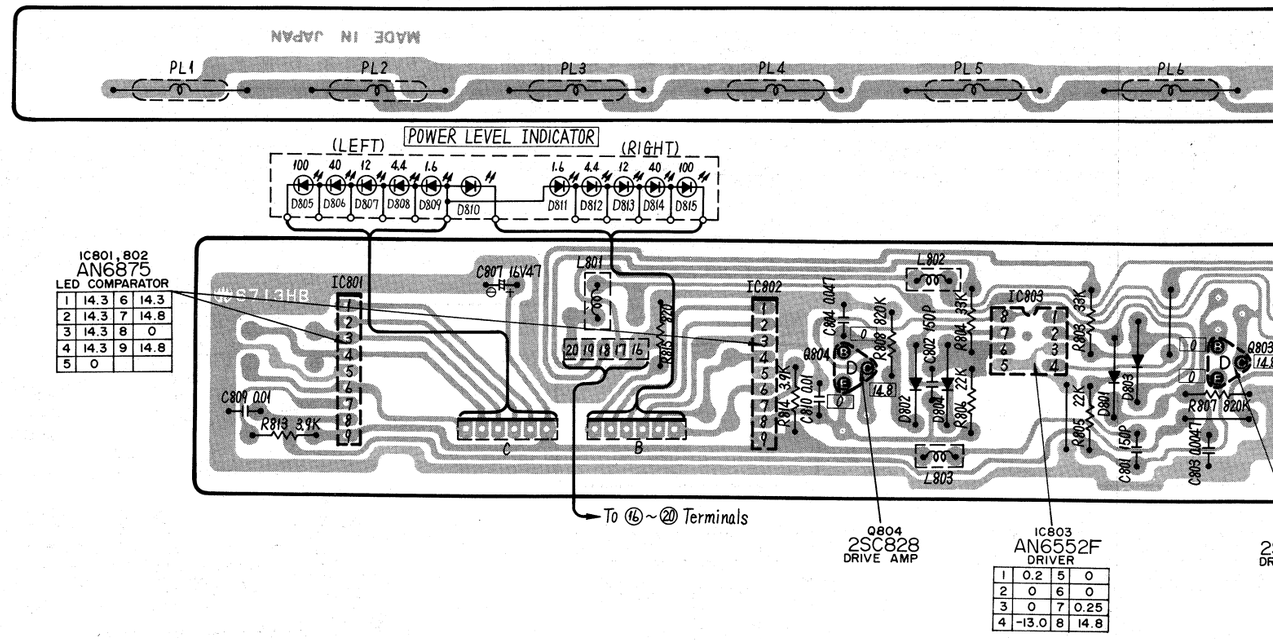


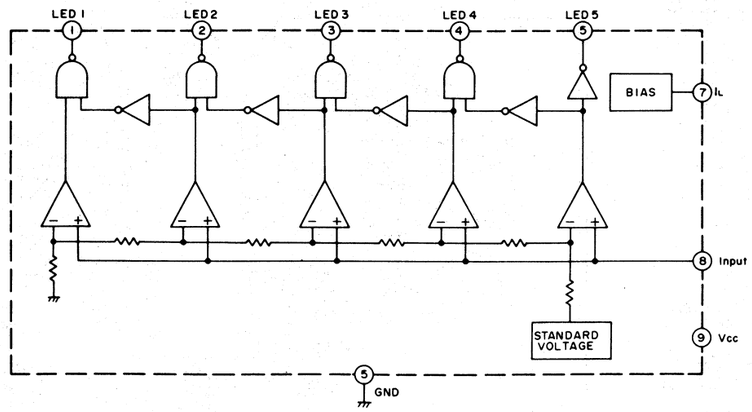
IC101 (AN278)
FM IF amplifier



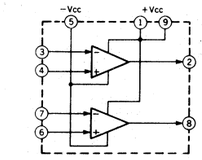
IC102 (AN7001SW)
AM Converter, FM IF amplifier, FM detector & MPX

■ PRINTED CIRCUIT BOARD WIRING VIEW (LED driver circuit P.C.B.)

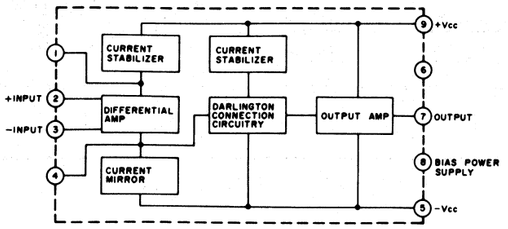




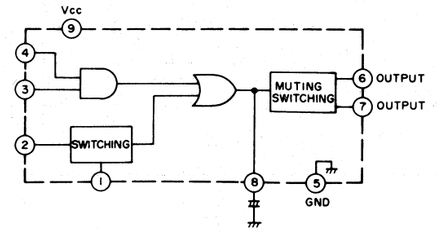
IC103 (AN6876)
Signal LED driver



IC201, 803 (AN6552F)
Operation amplifier



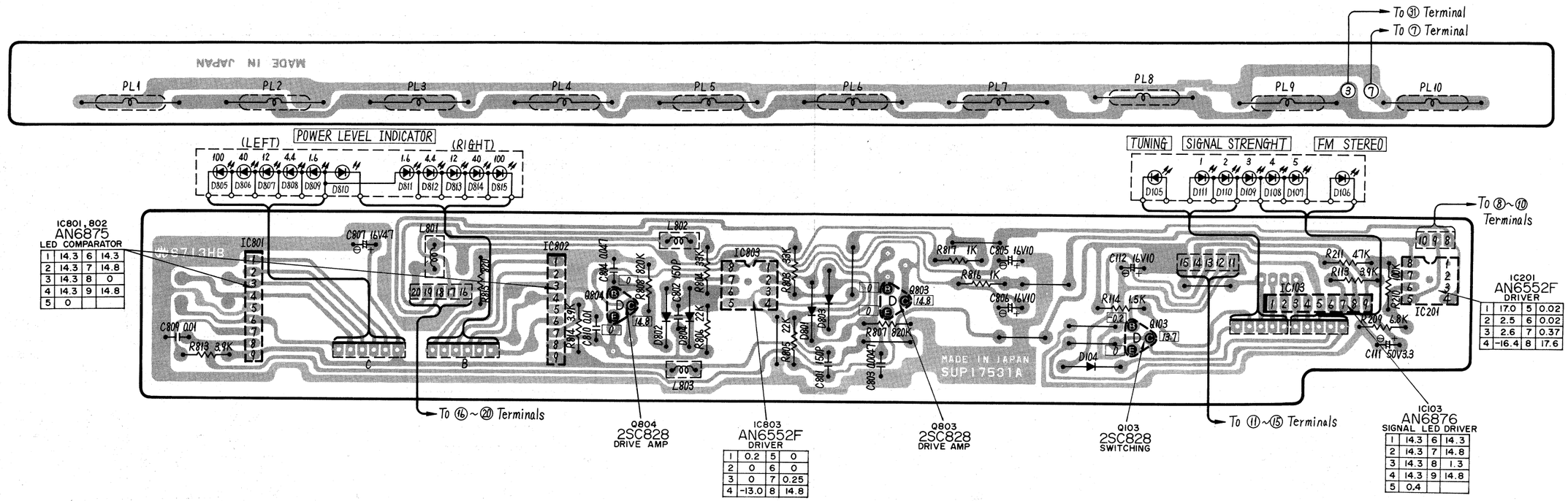
IC401, 402 (SVITA7322P)
Equalizer amplifier

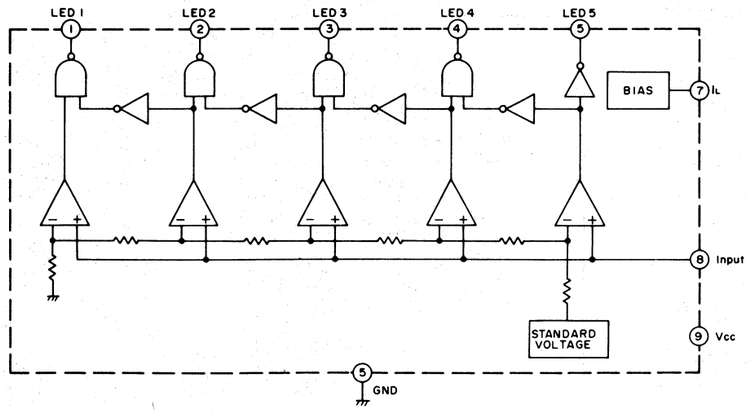


IC581 (AN 6136)
AF muting amplifier

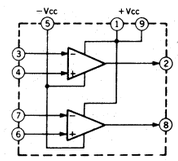
■ PRINTED CIRCUIT BOARD WIRING VIEW (LED driver circuit P.C.B.)

Earth (Ground) Lines

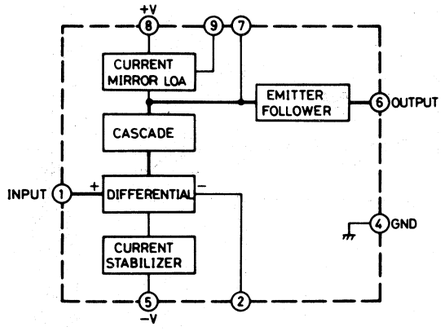




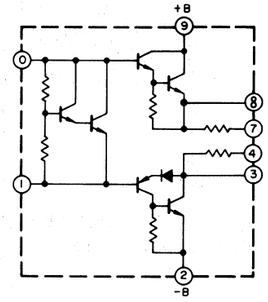
IC103 (AN6876)
Signal LED driver



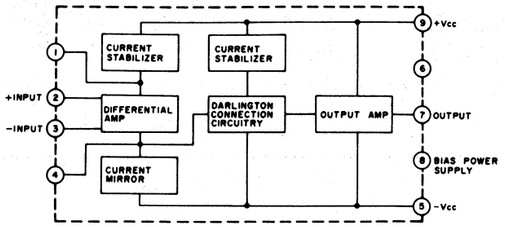
IC201, 803 (AN6552F)
Operation amplifier



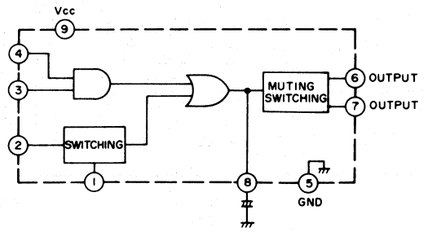
IC601, 602 (AN7060F)
Differential amplifier



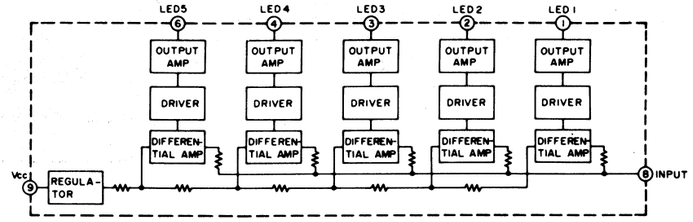
IC603, 604 (SVISTK1039)
Power amplifier



IC401, 402 (SVITA7322P)
Equalizer amplifier



IC581 (AN 6136)
AF muting amplifier

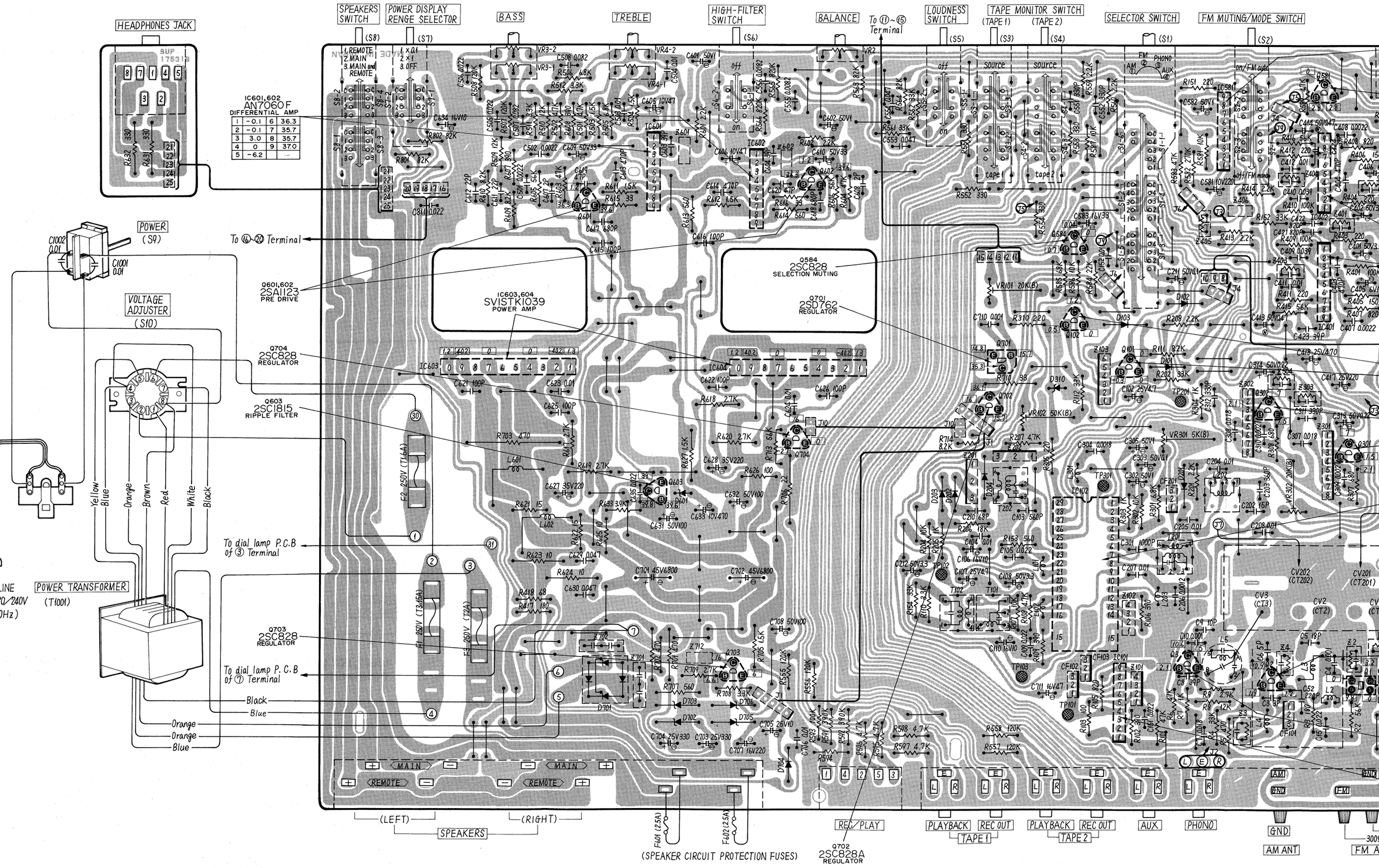


IC801, 802 (AN6875)
LED Comparator

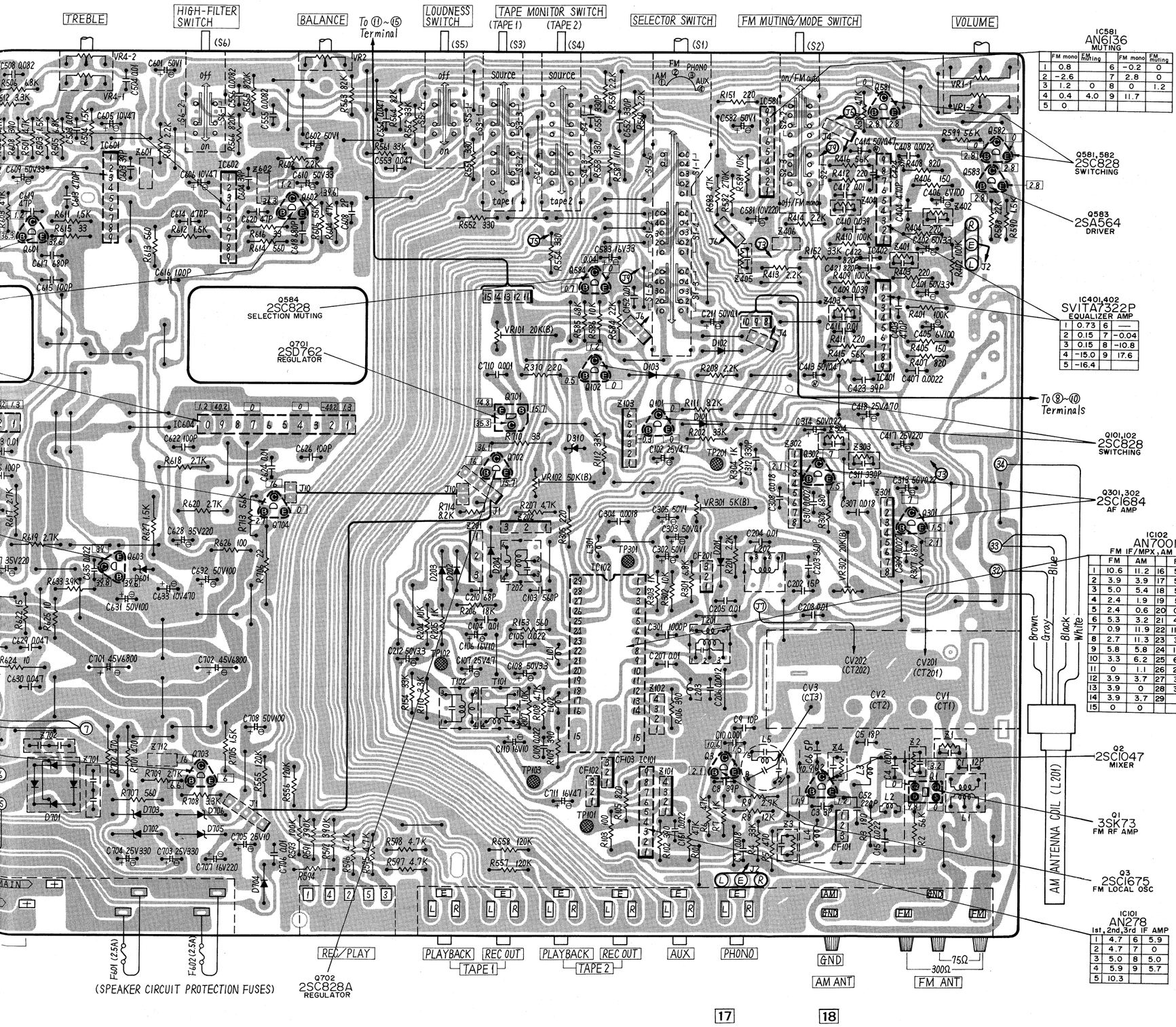
SA-303 SA-303

■ PRINTED CIRCUIT BOARD WIRING VIEW

Earth (Ground) Lines

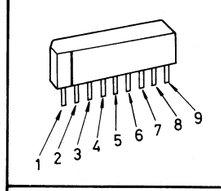


Earth (Ground) Lines

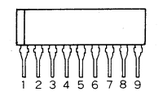

TREBLE
HIGH-FILTER SWITCH
(S6)
BALANCE
To ⑪~⑮ Terminal
LOUDNESS SWITCH
(S5)
TAPE MONITOR SWITCH
(TAPE 1)
(TAPE 2)
(S3)
(S4)
SELECTOR SWITCH
(S1)
FM MUTING/MODE SWITCH
(S2)
VOLUME
IC581 AN6136 MUTING
FM mono | FM muting | | FM mono | FM muting
1 0.8 | | 6 -0.2 | 0
2 -2.6 | | 7 2.8 | 0
3 1.2 | 0 | 8 0 | 1.2
4 0.4 | 4.0 | 9 11.7 |
5 0 | | | |
Q581,582 2SC828 SWITCHING
Q583 2SA564 DRIVER
IC401,402 SVITA7322P EQUALIZER AMP
1 0.73 | 6 |
2 0.15 | 7 -0.04
3 0.15 | 8 -10.8
4 -15.0 | 9 17.6
5 -16.4 |
To ⑧~⑩ Terminals
Q101,102 2SC828 SWITCHING
Q301,302 2SC1684 AF AMP
IC102 AN7001SW FM IF/MPX, AM RF/IF
FM AM FM AM
1 10.6 11.2 16 5.8 5.8
2 3.9 3.9 17 5.8 5.8
3 5.0 5.4 18 5.8 5.8
4 2.4 1.9 19 5.8 5.8
5 2.4 0.6 20 0.6 0.6
6 5.3 3.2 21 4.5 4.6
7 0.9 11.9 22 11.9 11.9
8 2.7 11.3 23 3.1 0
9 5.8 5.8 24 11.4 11.4
10 3.3 6.2 25 6.8 7.0
11 0 1.1 26 2.3 2.3
12 3.9 3.7 27 3.4 3.6
13 3.9 0 28 3.4 3.6
14 3.9 3.7 29 0 0
15 0 0
Brown Gray Black White Blue
Q584 2SC828 SELECTION MUTING
Q701 2SD762 REGULATOR
Q2 2SC1047 MIXER
AM ANTENNA COIL (L201)
Q1 3SK73 FM RF AMP
Q3 2SC1675 FM LOCAL OSC
IC101 AN278 1st, 2nd, 3rd IF AMP
1 4.7 | 6 5.9
2 4.7 | 7 0
3 5.0 | 8 5.0
4 5.9 | 9 5.7
5 10.3 | |
Q702 2SC828A REGULATOR
(SPEAKER CIRCUIT PROTECTION FUSES)
F601 (2.5A)
F602 (2.5A)
REC/PLAY
PLAYBACK TAPE 1
REC OUT TAPE 1
PLAYBACK TAPE 2
REC OUT TAPE 2
AUX
PHONO
GND AM ANT
75Ω 300Ω FM ANT

■ TERMINAL GUIDE OF TRANSISTORS AND IC'S

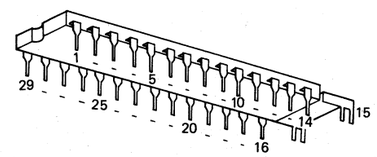
AN278



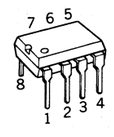
AN6876, AN6136
AN7060, AN6875



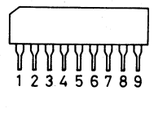
AN7001SW



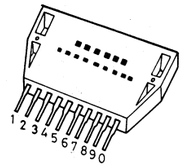
AN6552F



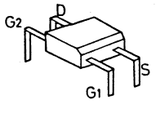
SVITA7322P



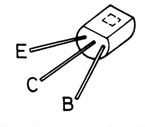
SVISTK1039



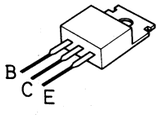
3SK73



2SC1047, 2SC1675
2SC828, 2SC1684
2SA564, 2SA1123
2SC1815, 2SC828A

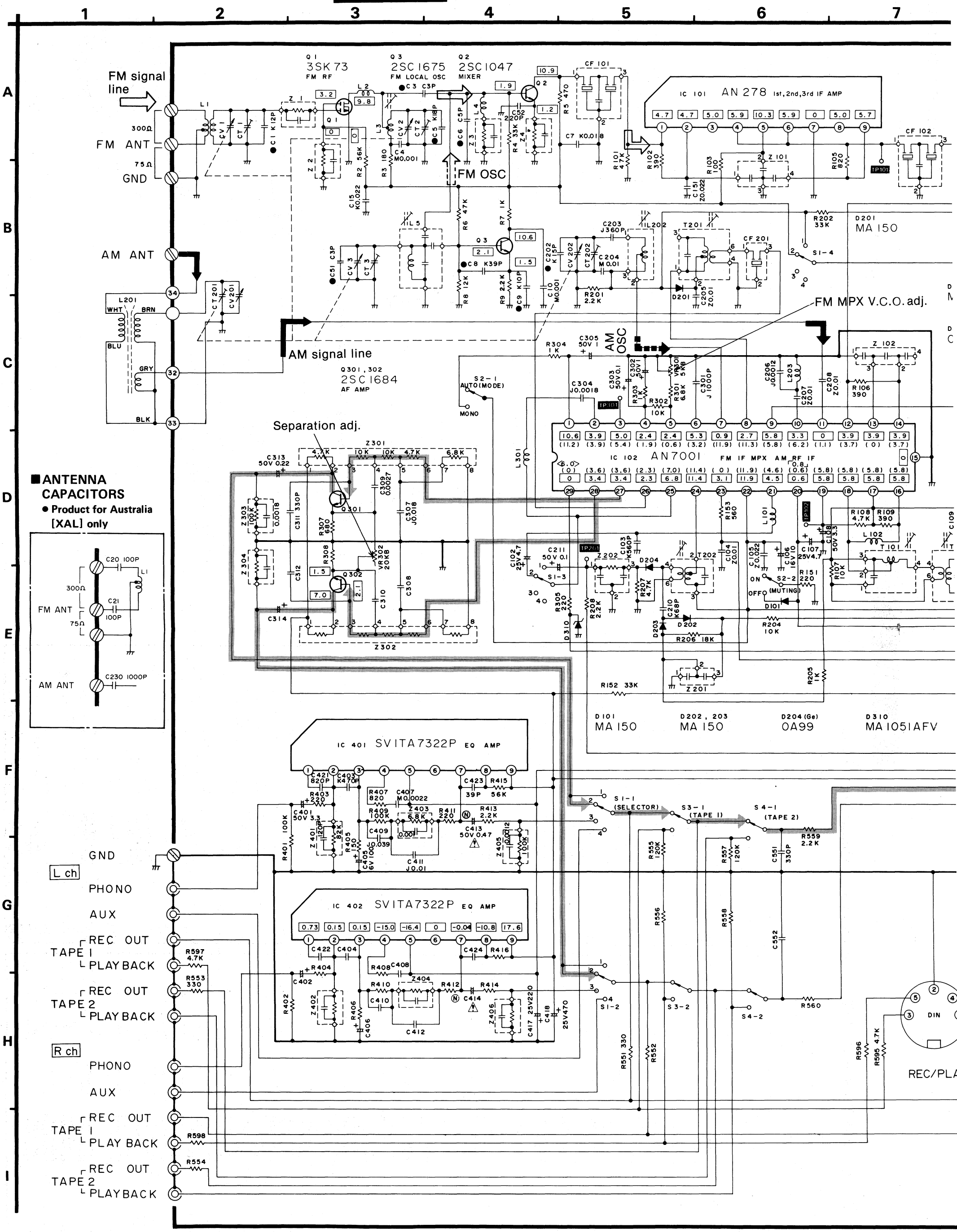


2SD762



■ SCHEMATIC DIAGRAM ..... MODEL SA-303

(This schematic diagram may be modified at any time with the development of new tech



he development of new technology.)

7 8 9 10 11 12 13

Balance control

Main control

Q581, 582 2SC828 SWITCHING

Q583 2SA564 DRIVER

IC 601 AN 7060 DIFFERENTIAL AMP

Treble control

Bass control

IC 581 AN6136 MUTING

IC 602 AN 7060F DIFFERENTIAL AMP

Treble control

Bass control

FM MPX V.C.O. adj.

D102 MA 150

D103 (Ge) 0A99

D201 MA 150

D310 MA1051AFV

Muting level adj.

LED light level adj.

Q701 2SD762 REGULATOR

Q702 2SC828A REGULATOR

Q703 2SC828 REGULATOR

Q704 2SC828 REGULATOR

Q101, 102, 584 2SC828 SWITCHING & SELECTION MUTING

D706 SVDMZ306B

D705 MA2120A

Q103 2SC828 SWITCHING

IC 201 AN6552F DRIVER

IC 103 AN6876 SIGNAL LED DRIVER

D104 MA 150

D105, 106, 810 LN224RP

D107~111, 805~809 811~815 LN424YP

POWER LEVEL INDICATOR

FM STEREO TUNING

SIGNAL STRENGTH

REC/PLAY

DIN

SUP 17511 A

Q601,602 2SA1123 PRE DRIVE

Q603 2SC1815 RIPPLE•FILTER

SUP 17531 B

IC 601 AN 7060 DIFFERENTIAL AMP

Positive voltage (40.2V) line

Treble control

Bass control

Treble control

Bass control

IC 602 AN 7060F DIFFERENTIAL AMP

IC 603

IC 604

IC 603,604 SVISTK1039 POWER AMP

D601 MA 1062FV

Q101,102,584 2SC828 SWITCHING & SELECTION MUTING

D706 SVDMZ306B

D705 MA2120A

Q584

Q702

Q704

Q703 2SC828 REGULATOR

Q704 2SC828 REGULATOR

D701 SVDS4VB10 D704 MA150

D702,703 MA2180B

HEADPHONES

Negative voltage (−40.2V) line

IC 803 AN6552F DRIVER

Q803,804 2SC828 DRIVE AMP

Q103 2SC828 SWITCHING

D801~804 MA150

D104 MA150

IC 801 AN 6875 LED COMPARATOR

IC 802 AN 6875 LED COMPARATOR

POWER LEVEL INDICATOR

TUNING

FM STEREO

SIGNAL STRENGTH

SUP 17531 A

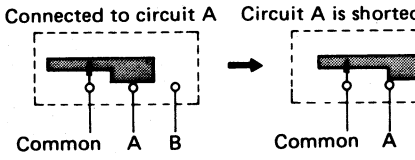
SUP 17511 B

Notes:

1. **S1-1 ~ S1-6:** Selector switch in **"FM"** pos
2. **S2-1 ~ S2-3:** FM muting/mode switch in
3. **S3-1 ~ S3-3:** Tape monitor 1 switch in **"s**
4. **S4-1 ~ S4-3:** Tape monitor 2 switch in **"s**
5. **S5-1, 5-2:** Loudness switch in **"off"** po
6. **S6-1, 6-2:** High filter switch in **"off"** p
7. **S7-1, 7-2:** Power display range switch i
8. **S8-1, 8-2:** Speakers selector switch in
9. **S9:** Power source switch in **"on**
10. **S10:** Voltage adjuster switch in **"**
11. Indicated voltage values are the standar with the chassis taken as standard. The impedance of the DC circuit tester.
    - Not apply signal to set and mut
    - ( ) AM signal reception.
    - ⌐ ⌙ FM muting to ON condition.
    - 〈 〉 FM stereo signal reception.
12. AF signal lines. FM signa
13. ⚠ indicates that only parts specified by t

Shorting Switch

This unit uses a shorting switch. As illu
In the circuit diagram, the shaded area



14 15 16 17 18 19 20

A B C D E F G H I

Q601,602 2SA1123 PRE DRIVE

Q603 2SC1815 RIPPLE-FILTER

SUP 17531 B

Positive voltage (40.2V) line

Negative voltage (−40.2V) line

IC 603,604 SVISTK1039 POWER AMP

D601 MA1062FV

D701 SVDS4VB10 D704 MA150

D702,703 MA2180B

IC 603

IC 604

Q601 Q602 Q603 Q804

D801 D802 D803 D804

IC 803 AN6552F DRIVER

Q803,804 2SC828 DRIVE AMP

D801~804 MA150

IC 801 AN6875 LED COMPARATOR

IC 802 AN6875 LED COMPARATOR

SUP 17531 A

SUP 17511 B

HEADPHONES

Lch MAIN Rch

Lch REMOTE Rch

S8-1 S8-2 S8-3 S8-4

T1001

S10

F1 250V T3.15A

F2 250V 1.6A

F3 250V T2A

F601 2.5A

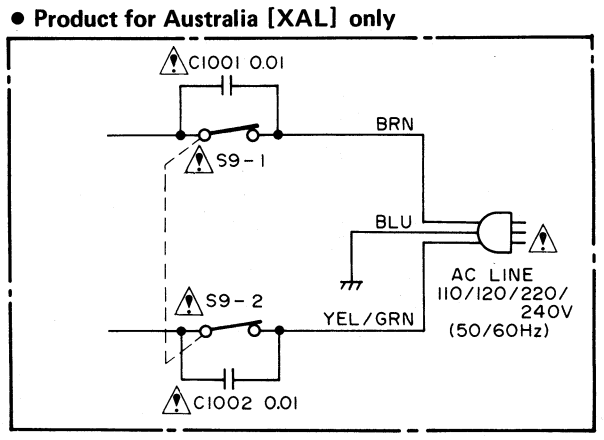
F602

PL1 8V 80mAx10 PL2 PL3 PL4 PL5 PL6 PL7 PL8 PL9 PL10

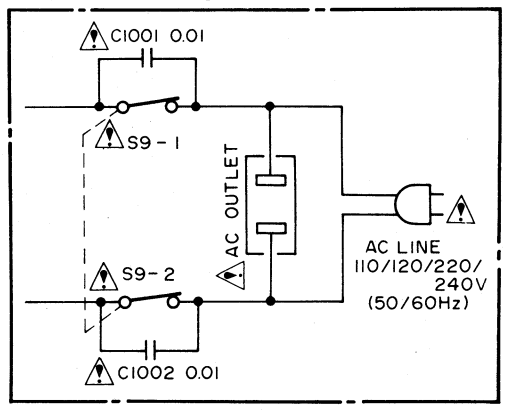
AC LINE 110/120/220/240V (50/60Hz)

■ POWER SOURCE CIRCUIT OF OTHER PRODUCTS

● **Product for Australia [XAL] only**



● **Product for Asia, Latin America, Middle East and Africa [XA]**

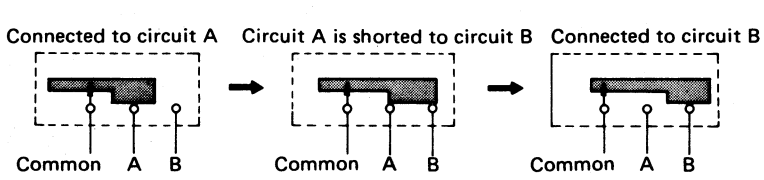


Notes:

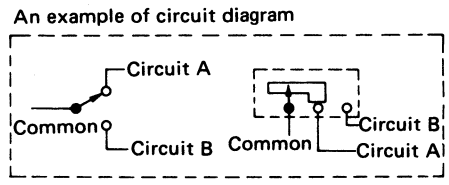
1. **S1-1 ~ S1-6:** Selector switch in **"FM"** position. ① AM ↔ ② FM ↔ ③ phono ↔ ④ aux
2. **S2-1 ~ S2-3:** FM muting/mode switch in **"on/FM auto"** position.
3. **S3-1 ~ S3-3:** Tape monitor 1 switch in **"source"** position. Source ↔ tape 1
4. **S4-1 ~ S4-3:** Tape monitor 2 switch in **"source"** position. source ↔ tape 2
5. **S5-1, 5-2:** Loudness switch in **"off"** position.
6. **S6-1, 6-2:** High filter switch in **"off"** position.
7. **S7-1, 7-2:** Power display range switch in **"X1"** position ①×0.1 ↔ ②×1 ↔ ③off
8. **S8-1, 8-2:** Speakers selector switch in **"main"** position ① remote ↔ ② main ↔ ③ main and remote
9. **S9:** Power source switch in **"on"** position.
10. **S10:** Voltage adjuster switch in **"240V"** position. 120V ↔ 110V ↔ 220V ↔ 240V
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - ▭ Not apply signal to set and muting switch to OFF condition.
    - ( ) AM signal reception.
    - ⌜ ⌟ FM muting to ON condition.
    - 〈 〉 FM stereo signal reception.
12. ⇨ AF signal lines. ⇨ FM signal lines. ➡ AM signal lines.
13. ⚠ indicates that only parts specified by the manufacuturer be used for safety.

Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.



An example of circuit diagram



elopment of new technology.)

7 8 9 10 11 12 13

Balance control

Main control

Q581, 582 2SC828 SWITCHING

Q583 2SA564 DRIVER

IC 601 AN 7060 DIFFERENTIAL AMP

Treble control

Bass control

IC 581 AN6136 MUTING

IC 602 AN 7060F DIFFERENTIAL AMP

Q101, 102, 584 2SC828 SWITCHING & SELECTION MUTING

D706 SVDMZ306B

D705 MA2120A

Muting level adj.

LED light level adj.

Q701 2SD762 REGULATOR

Q702 2SC828A REGULATOR

Q703 2SC828 REGULATOR

Q704 2SC828 REGULATOR

Q103 2SC828 SWITCHING

IC 201 AN6552F DRIVER

IC 103 AN6876 SIGNAL LED DRIVER

D104 MA150

D105, 106, 810 LN224RP

D107~111, 805~809 811~815 LN424YP

IC 801 AN6

IC 802 AN

D201 MA150

D102 MA150

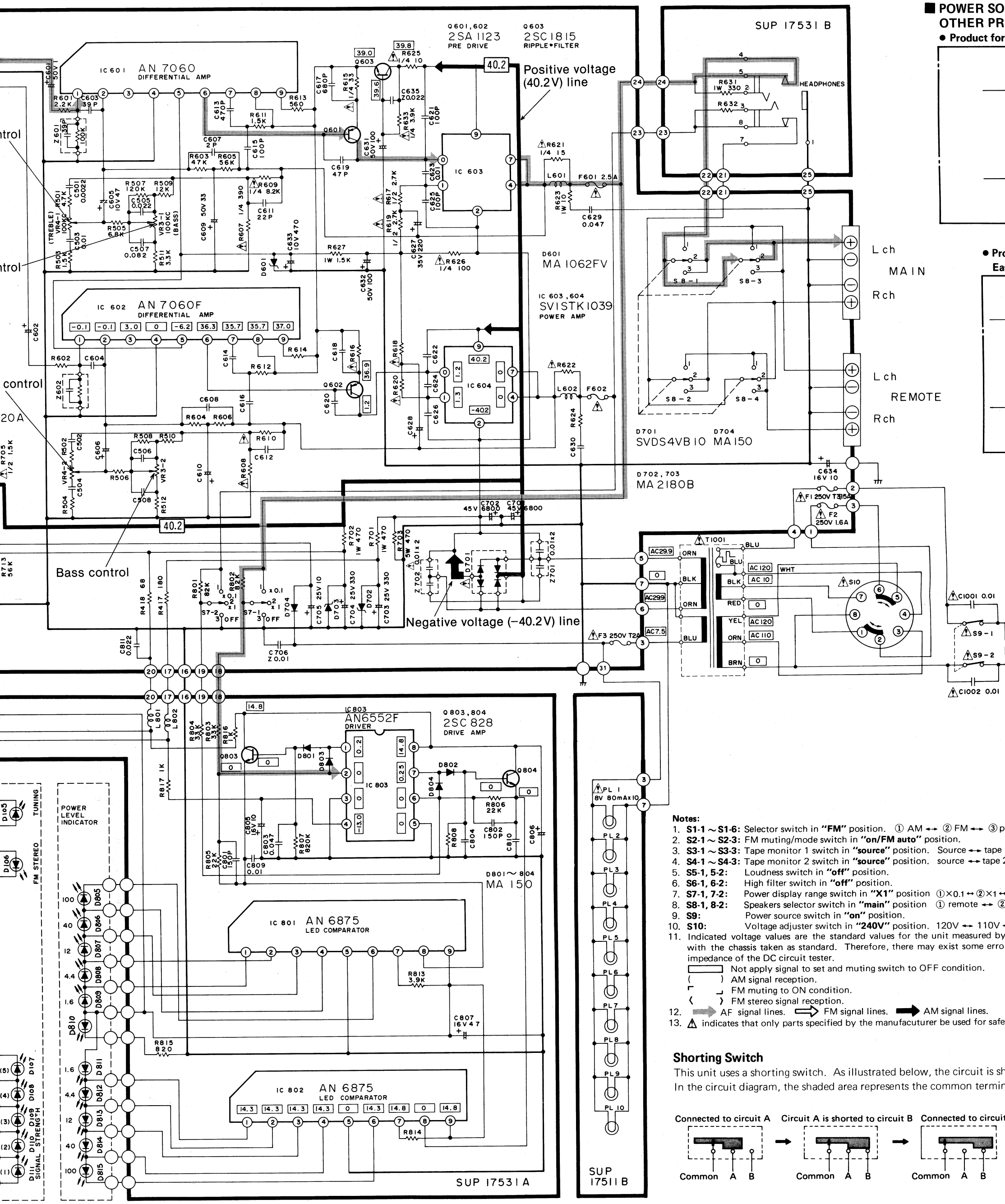
D103 (Ge) 0A99

D310 MA1051AFV

MPX V.C.O. adj.

REC/PLAY

SUP 17511 A



■ POWER SO
OTHER PR
● Product for
● Pro
Eas

Notes:

1. **S1-1 ~ S1-6:** Selector switch in **"FM"** position. ① AM ↔ ② FM ↔ ③ p
2. **S2-1 ~ S2-3:** FM muting/mode switch in **"on/FM auto"** position.
3. **S3-1 ~ S3-3:** Tape monitor 1 switch in **"source"** position. Source ↔ tape
4. **S4-1 ~ S4-3:** Tape monitor 2 switch in **"source"** position. source ↔ tape 2
5. **S5-1, 5-2:** Loudness switch in **"off"** position.
6. **S6-1, 6-2:** High filter switch in **"off"** position.
7. **S7-1, 7-2:** Power display range switch in **"X1"** position ①×0.1 ↔ ②×1 ↔
8. **S8-1, 8-2:** Speakers selector switch in **"main"** position ① remote ↔ ②
9. **S9:** Power source switch in **"on"** position.
10. **S10:** Voltage adjuster switch in **"240V"** position. 120V ↔ 110V ↔
11. Indicated voltage values are the standard values for the unit measured by with the chassis taken as standard. Therefore, there may exist some erro impedance of the DC circuit tester.
    - ▭ Not apply signal to set and muting switch to OFF condition.
    - ( ) AM signal reception.
    - ⌜ ⌟ FM muting to ON condition.
    - 〈 〉 FM stereo signal reception.
12. ▰ AF signal lines. ⇨ FM signal lines. ➡ AM signal lines.
13. ⚠ indicates that only parts specified by the manufacuturer be used for safe

Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is sh
In the circuit diagram, the shaded area represents the common termin

14 15 16 17 18 19 20

A B C D E F G H I

Q601,602 2SA1123 PRE DRIVE

Q603 2SC1815 RIPPLE•FILTER

SUP 17531 B

Positive voltage (40.2V) line

Negative voltage (−40.2V) line

HEADPHONES

D601 MA1062FV

IC 603,604 SVISTK1039 POWER AMP

D701 SVDS4VB10 D704 MA150

D702,703 MA2180B

Lch MAIN Rch

Lch REMOTE Rch

IC 603

IC 604

Q601

Q602

T1001

S10

F1 250V T3.15A

F2 250V 1.6A

F3 250V T2A

AC LINE 110/120/220/240V (50/60Hz)

AC OUTLET

IC 803 AN6552F DRIVER

Q803,804 2SC828 DRIVE AMP

D801~804 MA150

IC 801 AN6875 LED COMPARATOR

IC 802 AN6875 LED COMPARATOR

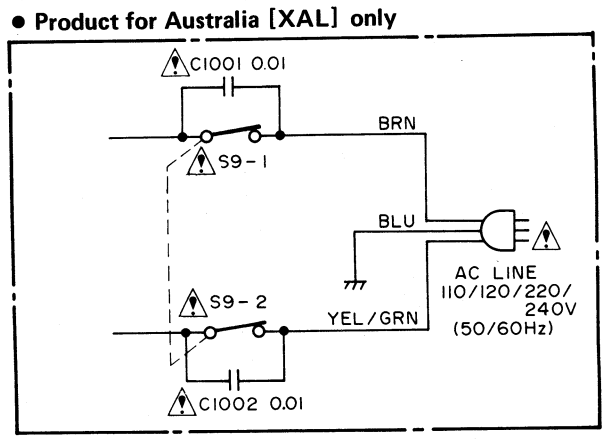
PL 1 8V 80mA×10

SUP 17511 B

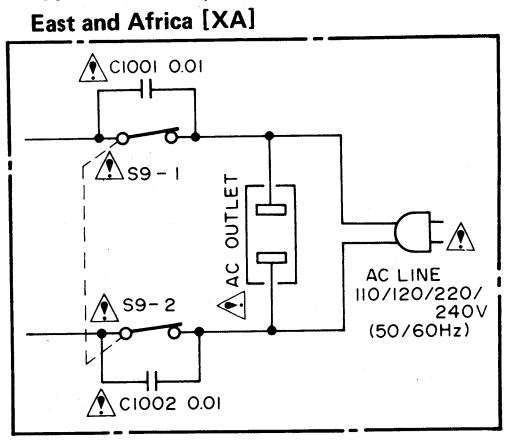
SUP 17531 A

■ POWER SOURCE CIRCUIT OF OTHER PRODUCTS

● **Product for Australia [XAL] only**



● **Product for Asia, Latin America, Middle East and Africa [XA]**

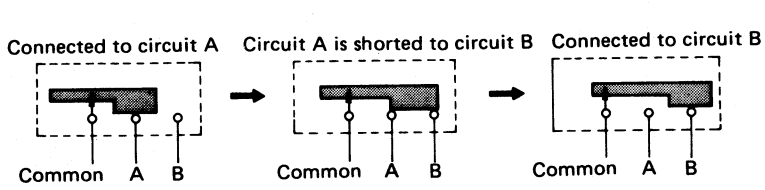


Notes:

1. **S1-1 ~ S1-6:** Selector switch in **"FM"** position. ① AM ↔ ② FM ↔ ③ phono ↔ ④ aux
2. **S2-1 ~ S2-3:** FM muting/mode switch in **"on/FM auto"** position.
3. **S3-1 ~ S3-3:** Tape monitor 1 switch in **"source"** position. Source ↔ tape 1
4. **S4-1 ~ S4-3:** Tape monitor 2 switch in **"source"** position. source ↔ tape 2
5. **S5-1, 5-2:** Loudness switch in **"off"** position.
6. **S6-1, 6-2:** High filter switch in **"off"** position.
7. **S7-1, 7-2:** Power display range switch in **"X1"** position ①×0.1 ↔ ②×1 ↔ ③ off
8. **S8-1, 8-2:** Speakers selector switch in **"main"** position ① remote ↔ ② main ↔ ③ main and remote
9. **S9:** Power source switch in **"on"** position.
10. **S10:** Voltage adjuster switch in **"240V"** position. 120V ↔ 110V ↔ 220V ↔ 240V
11. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - ▭ Not apply signal to set and muting switch to OFF condition.
    - ( ) AM signal reception.
    - ⌜ ⌟ FM muting to ON condition.
    - 〈 〉 FM stereo signal reception.
12. ⇨ AF signal lines. ⇨ FM signal lines. ➡ AM signal lines.
13. ⚠ indicates that only parts specified by the manufacuturer be used for safety.

Shorting Switch

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened. In the circuit diagram, the shaded area represents the common terminal.



An example of circuit diagram